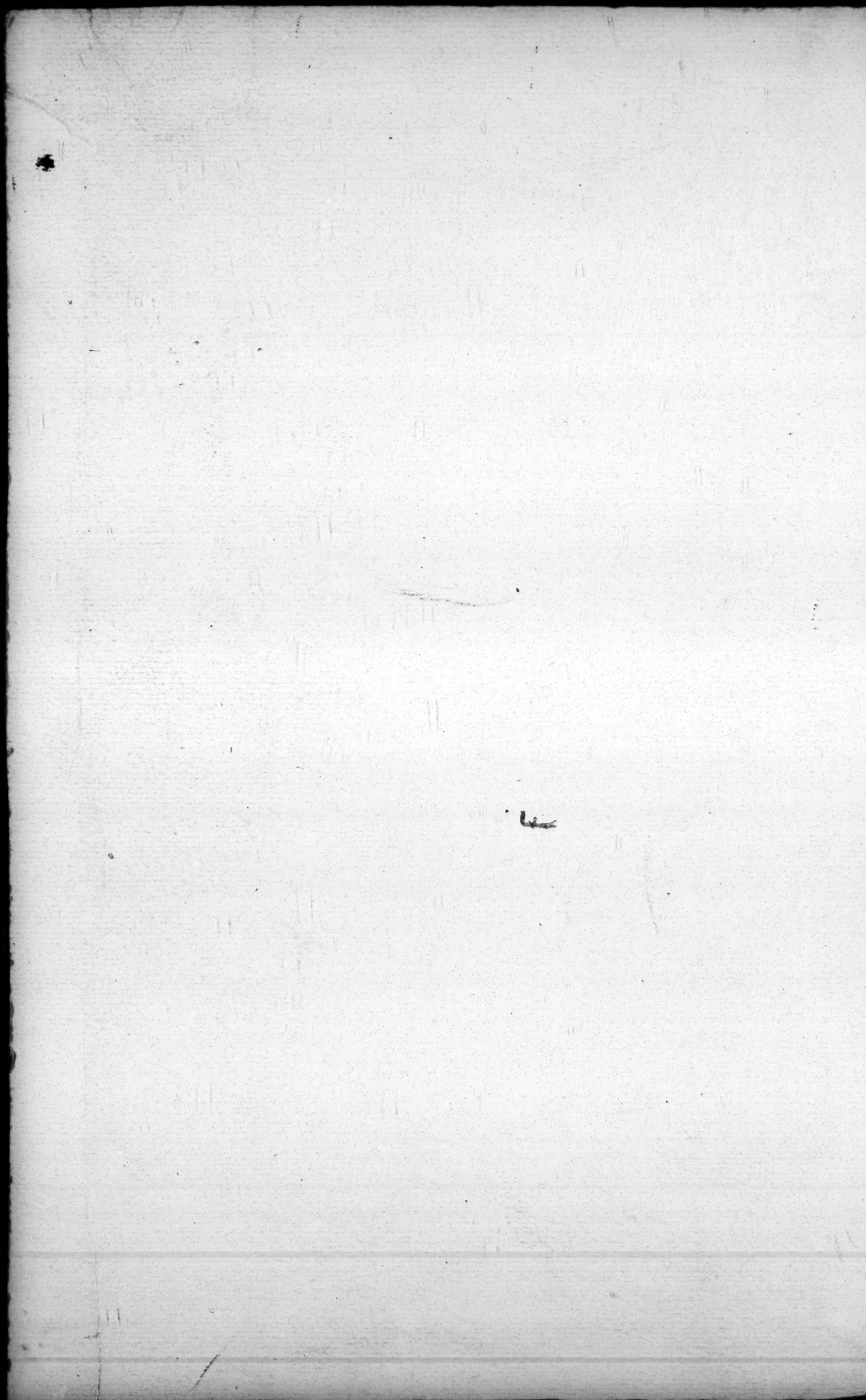




Massacre of de Sangle, Lamanon and ten others of the two crews.



C. J. Carter

A

VOYAGE
ROUND THE WORLD,

IN THE YEARS 1785, 1786, 1787, AND 1788,

By J. F. G. DE LA PÉROUSE:

PUBLISHED CONFORMABLY TO THE DECREE OF THE

NATIONAL ASSEMBLY,

OF THE 22D OF APRIL, 1791,

AND EDITED BY

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BRIGADIER GENERAL IN THE CORPS OF ENGINEERS,
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IN THE YEARS 1837, 1838, 1839, AND 1840

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ERRATA.

- Page 11, line 20, insert *they* after *determination*.
 — 45, — 26, for *Kabroof* read *Kaborof*.
 — 134, — 47, for *Cooke* read *Cook*.
 — 155, — 1, for *Journal* read *Journey*.
 — 159, — 16, 17, for *plans* read *planes*.
 — 171, — dele *Chapter XXVII*.
 — 329, — ult. for *rivality* read *rivalry*.
 — 340, — penult. for *smaller* read *left*.



View of the Harbour of St. Peter & St. Paul in Kamtschatka.

VOYAGE ROUND THE WORLD,

IN THE YEARS

1785, 1786, 1787, AND 1788.

CHAPTER XXII.

Anchorage in the bay of Avatscha.—Obliging reception given us by lieutenant Kaborof.—Arrival of Mr. Kasloff-Ougrenin, governor of Okhotsk, at the harbour of St. Peter and St. Paul.—He is immediately followed by Mr. Schmaleff, and by the unfortunate Ivachkin, who inspires us with the most lively interest in his fate.—Kind attention paid us by the governor.—A ball of the Kamtschadales.—A courier from Okhotsk brings us letters from France.—We discover the tomb of M. de la Croyere, and place an inscription on copper over it, as well as over that of captain Clerke.—New views of Mr. Kasloff, in the administration of Kamtschatka.—We obtained permission to send our interpreter to France with our dispatches.—Departure from the bay of Avatscha.

(SEPTEMBER 1787.)

WE had not yet moored before the harbour of St. Peter and St. Paul, when a visit was paid us by the *toyon*, or chief, of the village, and several other

inhabitants. All of them brought us presents of salmon, or skate, and offered us their services in hunting bears, or in shooting the ducks, with which the ponds and rivers are covered. We accepted their offers; lent them muskets; gave them powder and shot; and found no want of wild-fowl during our whole stay in the bay of Avatscha. They required no money as a reward for their fatigue; but we had been so amply provided at Brest with articles of the greatest value to Kamtschadales, that we insisted upon their accepting tokens of our gratitude, which our opulence enabled us to proportion rather to their wants than to the worth of their game. The government of Kamtschatka had been entirely changed since the departure of the English. It was now only a dependency of that of Okhotsk; and the different posts of the peninsula were commanded by different officers, who were accountable for their conduct to the commandant-general of that province alone. Captain Schmaleff, the same person who succeeded major Behm *pro tempore*, was still in the country, with the title of commandant of the Kamtschadales. Mr. Reinikin, his real successor, who arrived at Kamtschatka a short time after the departure of the English, had remained there only four years, and had returned to Petersburg in 1784. These particulars were communicated to us by lieutenant Kaborof, who was governor of the harbour of St. Peter and St. Paul, with a serjeant and a detachment of forty soldiers

or *coffacks* under his command. The kind attentions of this officer were boundless: his personal exertions, those of his soldiers, every thing, in short, that he possessed was at our service. He would not even permit me to send off one of my own officers to *Bolcheretsk*, where Mr. *Kasloff-Ougrenin*, the governor of *Okhotsk*, who was making a tour through his province, happened most fortunately to be. He told me, that the governor was expected to arrive in a few days at *St. Peter and St. Paul's*, and that he was probably already on the road. He added, that the journey was more tedious than we might suppose, because the time of the year not permitting the use of a sledge, it was necessary to travel half the way on foot, and the other half in a canoe upon the rivers of *Avatscha* and *Bolcheretsk*. Mr. *Kaberof* at the same time proposed to send off a *coffack* with my dispatches to Mr. *Kasloff*, of whom he spoke with an enthusiasm and satisfaction in which it was hardly possible not to participate. He congratulated himself every moment upon the opportunities we should have of conversing, and communicating with an officer, whose education, manners, and knowledge, were not inferior to those of any officer of the Russian empire, or indeed of any nation whatever. M. de *Lesseps*, our young interpreter, who spoke the Russian language as fluently as French, translated the kind expressions of the lieutenant; and wrote a Russian letter in my name to the governor of *Okhotsk*, to whom I

also wrote in French myself. I told him, that the narrative of Cook's last voyage had spread the fame of the hospitality of the Kamtschadale government; and that I flattered myself I should meet with a reception similar to that of the English navigators, since our voyage, like theirs, was meant to conduce to the common advantage of all maritime nations. As Mr. Kasloff's answer could not reach us in less than five or six days, the worthy lieutenant told us, that he only anticipated his orders, and those of the empress of Russia, by begging us in the mean time to consider ourselves as in our native land, and to dispose freely of every thing the country afforded. It was easy to perceive by his gestures, his looks, and his expressions, that if it had been in his power to perform a miracle, the mountains and morasses of Kamtschatka would have been transformed for our gratification into an elysium. A report was circulated, that Mr. Kasloff had no letters for us, but that Mr. Steinheil, the former governor, whom Mr. Schmaleff succeeded as captain-ispravnik, or inspector of the Kamtschadales, and who resided at Verkhnei-Kamtschatka, possibly had; and instantly upon this vague conjecture, which had scarcely a semblance of truth, he sent off an express, who had more than 150 leagues to travel on foot. Mr. Kaborof knew how extremely desirous we were of receiving letters from France. He had learned from M. de Lesseps how great our disappointment had been on finding that no packets addressed to us had

had arrived at St. Peter and St. Paul's. He appeared almost as much afflicted as ourselves; and by his solicitude and cares seemed to say, that he would go to Europe himself in search of our letters, if there were any hope of his finding us on his return. The serjeant and all the soldiers manifested an equal desire to oblige, and Mrs. Kaborof, on her part shewed us every possible attention: her house was open to us at all hours of the day, and tea and the other refreshments of the country were prepared there for our use. Every one wished to make us presents, and, in spite of our determination not to receive any, it was impossible to withstand the pressing solicitations of the lieutenant's lady, who forced our officers, M. de Langle, and myself, to accept a few skins of fables, rein-deer, and foxes, far more useful, without doubt, to those who parted with them, than to us who were about to return towards the tropics. Fortunately we had the means of acquitting ourselves of the obligation; and we insisted on being permitted in our turn to offer such things as were not to be found at Kamtschatka. But though richer than our hosts, our artificial manners did not permit us to vie with them in that simple and affecting expression of kindness, which stamps a value on the meanest gift.

Through the medium of M. de Lesseps I signified to Mr. Kaborof, that I was desirous of forming a little establishment on shore, for the purpose of lodging our astronomers, and depositing a qua-

dyant and a pendulum. Immediately the most commodious house in the village was offered us; and as we repaired thither but a very few hours after the request was made, we thought we might venture to accept it without indelicacy, because to us it appeared uninhabited. But we learned afterwards, that the lieutenant, to make room for us, had turned out the corporal, who was at the same time his secretary, and the third person in the country. Such is the Russian discipline, that its movements are executed with as much promptitude as the manual exercise, no order being necessary but a nod of the head.

Our astronomers had scarcely erected their observatory, when our naturalists, whose zeal was not inferior to theirs, determined to visit the volcano, in appearance not more than two leagues distant, though in fact it was at least eight to the foot of the mountain, which was almost entirely covered with snow, and at the summit of which the crater was situated. The mouth of this crater, turned towards the bay of Avatscha, presented constantly to our eyes thick clouds of smoke; and once during the night we perceived faint blue and yellow flames; but they rose to a very inconsiderable height.

The zeal of Mr. Kaborof was as much excited in favour of our naturalists, as of our astronomers; and immediately eight Cossacks were ordered to accompany Messieurs Bernizet, Monges, and Receveur. The health of M. Lamanon was not sufficiently re-established

established to permit him to engage in the expedition. Never perhaps was one so laborious undertaken for the advancement of the sciences. Not one of the learned English, Germans, or Russians, who had travelled in Kamtschatka had ever ventured upon so difficult an enterprise. From the aspect of the mountain I judged it to be entirely inaccessible. There was no appearance of verdure—it was nothing but a rock, of which the acclivity was terribly steep. Our intrepid travellers set off in hopes of overcoming these obstacles. The Cossacks were loaded with their baggage, which consisted of one tent, a number of skins, and the provision that each person had laid in for four days. The honour of carrying the barometers, the thermometers, the acids, and the other articles necessary for observation, was retained by the naturalists, who could not trust such frail instruments to any other hands; besides, their guides were only to conduct them to the bottom of the peak, a prejudice, as ancient perhaps as Kamtschatka, making both Kamtschadales and Russians believe, that the mountain emits a vapour, which must infallibly suffocate all who are rash enough to ascend it. They flattered themselves no doubt, that our natural philosophers would, like themselves, stop at the foot of the volcano, having probably been inspired with a tender concern for their fate by a few glasses of brandy given them previous to their departure. With this hope they set off in high spirits, and made their first halt in

the middle of the woods, at six leagues distance from the harbour of St. Peter and St. Paul. The ground they had as yet gone over opposed little obstacle to their passage, though covered with shrubs and trees, the greater number of the latter being of the birch species. The pines that were there were stunted, and little better than dwarfs. One species of them bears cones, of which the seeds or nuts are good to eat; while a very wholesome and agreeable beverage flows from the bark of the birch. This liquor the Kamtschadales take care to collect, and drink very freely. Berries of every kind, and of every shade of red and black, also offered themselves to the travellers at every step. Their taste is in general somewhat acid; but they are rendered highly palatable by the admixture of sugar.

At sunset the tent was pitched, the fire lighted, and every thing prepared for passing the night, with a promptitude unknown to people accustomed to reside in cities. The greatest care was taken to prevent the fire from spreading to the trees of the forest. The application of the stick to the backs of the Cossacks would not have sufficed to expiate so serious a fault, because the flames never fail to put the fables to flight. After such an accident no more are to be found during the winter, which is the hunting season; and as the skin of these animals, the only riches of the country, is given in exchange for all the commodities the inhabitants stand in need of, and serves to pay the annual
tribute

tribute due to the crown, it is easy to conceive the enormity of a crime that deprives the Kamtschadales of advantages so important. The Cossacks accordingly were at great pains to cut down the grass round the fire place, and before their departure, to dig a deep hole to receive the ashes, which they extinguished by covering them with earth well moistened with water. During this day's journey they saw no quadruped but a hare, which was almost white: neither bear, argali*, nor reindeer, made its appearance, although these animals are very common in the country. The next morning they rose at break of day, and continued their journey. It had snowed hard during the night, and, what was still worse, a thick fog covered the volcanic mountain, the foot of which our natural philosophers did not reach till three o'clock in the afternoon. Their guides, according to agreement, stopped as soon as they reached the limits of the vegetative earth, pitched their tents, and lighted a fire. That night's rest was a necessary preparative to the fatigues of the next day.

* This animal is the mountain-sheep, or *Capra Ammon* of the Linnean system. It is supposed to exist in no part of Europe but Corsica and Sardinia, and to be the same of which a living specimen existed a few years ago in the Prince of Conde's collection at Chantille. It was there called *Mouffoli*, and was considered by M. Buffon as the parent stock whence all the varieties of domestic sheep are sprung. T.

At .

At six o'clock in the morning Messieurs Bernizet, Mongés, and Receveur, began to ascend the steep, and did not stop till three in the afternoon, when they reached the very edge of the crater, but at the lowermost part. They had been often obliged to have recourse to their hands in order to support themselves among the broken rocks, the intervals between them being sometimes very dangerous precipices. All the substances of which the mountain is composed are lavas more or less porous, and almost in the state of pumice-stone. At the summit they met with gypseous stones, and crystallized sulphur; but the latter was much less beautiful than that of the peak of Teneriffe. In general, indeed, the schorls, and all the other stones they found there, were much inferior in beauty to those of that ancient volcano, which has not been in a state of eruption for a century past, whereas the Kamtschadalian mountain threw up stones and ashes in 1778, during captain Clerke's stay in the bay of Avatscha. They brought back with them, however, some tolerable specimens of chrysolite; but they encountered such bad weather, and passed over so rough a road, that their being able to add a new weight to that of the barometers, thermometers, and other instruments, is truly astonishing. Their horizon never extended beyond a musket-shot, except for a few minutes only, when they perceived the bay of Avatscha, and the frigates, which
from

from that elevation appeared no bigger than small canoes. Their barometer upon the edge of the crater fell to nineteen inches, eleven lines, and $\frac{2}{10}$ while ours on board the frigates, where we were making hourly observations, pointed at the very same time to twenty-seven inches nine lines $\frac{2}{10}$. Their thermometer was two degrees and a half below the freezing point, and differed no less than twelve degrees from the temperature at the water-side. Thus, admitting the calculations of the natural philosophers, who believe in this mode of measuring elevations, and making the requisite corrections by the thermometer, the travellers must have ascended about fifteen hundred toises, a prodigious height, considering the difficulties they had to surmount. But their views were so frustrated by fogs, that they resolved to go over the same ground again the following day, if the weather should be more favourable, difficulties having only increased their ardour; and with this courageous determination descended the mountain, and repaired to their tents. The night being already come on, their guides had said prayers for their souls, and swallowed a part of the liquor, for which they supposed that dead men could no longer have occasion. The lieutenant, when informed on their return of this hasty proceeding, ordered the most culpable to be punished with a hundred stripes, which were duly administered before we knew any thing of the matter, and consequently

frequently before it was possible for us to solicit their pardon. The night, after this journey to the mountain's top, was dreadful: the fall of snow redoubled, and in a few hours covered the earth several feet deep. This forced them to give up all idea of executing the plan of the preceding afternoon, and that very evening they arrived at the village of St. Peter and St. Paul, after a march of eight leagues, which the natural declivity of the ground rendered less fatiguing than they had found it before.

While our mineralogists and astronomers were making such good use of their time, we filled our casks with water, and our hold with wood, and cut and dried hay for the live stock we expected; for we had now only one sheep left. The lieutenant had written to Mr. Kasloff, begging him to collect as many oxen as he could: he calculated with sorrow, that it was impossible for us to wait for those that were no doubt coming from Verknei by order of the governor, as it would require at least six weeks for their conveyance. The indifference of the inhabitants of Kamtschatka in regard to cattle has prevented their multiplying in the southern part of that peninsula, where, with a little care, they might soon be as abundant as in Ireland. The finest and thickest grass grows in natural meadows to the height of more than four feet; and an immense quantity of hay might be made for the winter, which in that climate lasts between seven

and eight months. But the Kamtschadales are incapable of such cares: it would be necessary to have barns, and vast stables sheltered from the cold; while to them it appears far more commodious to live upon the produce of their hunting and fishing, particularly upon the salmon, which comes every year at the appointed time, like the manna of the desert, to fill their nets, and insures them a plentiful subsistence till the return of the season. The Cossacks, and the Russians, who are better soldiers than farmers, have adopted the same method. The lieutenant and the serjeant alone had little gardens for the cultivation of potatoes and turnips; but neither their exhortation, nor their example, had any influence over their countrymen, who ate potatoes with an excellent relish, but who, to procure them, would not have consented to take any farther trouble than that of pulling them up, in case nature had offered them spontaneously, like *saranne* *, garlick, and especially the berries, of which they make agreeable drinks, and sweetmeats that they reserve for the winter season. Our European seeds having kept very well, we gave a great quantity of them to Mr. Schmaleff, to the lieutenant, and to the serjeant; and hope on some future day to hear that they have retained their vegetative power. In the midst

* A species of lily peculiar to Siberia and Kamtschatka. T.

of our labours we found time for pleasure; and made several hunting parties on the rivers Avatscha and Paratounka, being very desirous of getting a shot at the bears, rein-deer, or argali. We were obliged, however, to be contented with a few ducks, or rather teal, a paltry sort of game, which ill repaid our long and fatiguing excursions. We were more fortunate through the medium of our friends the Kamtschadales, who brought us, during our stay, four bears, an elk, and a rein-deer, with such a quantity of divers, and other wild fowl, that we distributed them among our crews, who began already to be tired of fish. A single cast of the net almost close alongside of our frigates would have sufficed for the subsistence of half a dozen ships; but there was little variety of species, the fish taken being seldom any thing but small cod, herrings, plaice, and salmon. I gave orders to salt only a few barrels, because it was represented to me, that fish so small and tender could not resist the corrosive activity of the salt; and that it was better to preserve our stock of that article for the hogs we should find in the islands of the South sea. While we were passing our time in a manner which appeared very pleasant after the fatigues we had recently undergone in exploring the coasts of Oku-Jesso and Tartary, Mr. Kasloff had set off for the harbour of St. Peter and St. Paul; but he travelled slowly, because he wished to examine every thing, the object of his journey

journey being to establish the best possible order in the administration of the province. He knew that a general plan could not be formed for that purpose till he had first inquired what the country produced, and what it might be made to produce by a mode of cultivation suitable to the climate. He wished also to make himself acquainted with the stones, minerals, and in general with all the substances that compose the soil. His observations detained him a few days at the hot springs at twenty leagues distance from St. Peter and St. Paul, whence he brought several stones, and other volcanic matters, with a species of gum, which was analyzed by Mr. Monges. On his arrival, M. Kasloff told us with great civility, that having learned by the public papers, that several able naturalists had embarked on board our frigates, he had been desirous of availing himself of so fortunate a circumstance, in order to learn the nature of the minerals of the peninsula, and thus to become a naturalist himself. The politeness of Mr. Kasloff, and indeed the whole of his behaviour, was exactly the same as that of the best educated inhabitants of the largest cities in Europe. He spoke French; and was well informed concerning all the objects of our research, as well in geography as in natural philosophy. It is easy to conceive, that an intimate acquaintance between him and us was speedily formed. The day after his arrival he

came

came to dine with me on board the *Bouffole*, in company with Mr. Schmaleff, and the vicar of *Paratqunka*. I ordered him to be saluted with thirteen guns. Our faces, which bespoke better health even than that which we enjoyed at our departure from Europe, surprising him exceedingly, I told him, that we owed a little of it to our own care, and a great deal to the good living we had met with in his government. Mr. Kasloff seemed to participate in our comfortable situation; but he expressed the greatest concern at his inability to get together more than seven oxen before the time of our departure, which was too near at hand to admit of their being brought from the river of *Kamtchatka*, a hundred leagues distant from *St. Peter* and *St. Paul*. For six months he had been in expectation of the vessel that was to bring from *Okhotsk* the meal and other provision necessary for the garrisons in *Kamtchatka*, and began to feel some anxiety for her fate. Our surprise at not receiving any letters was much lessened when he told us, that since his departure from *Okhotsk* he had not received a single express. He added, that he was going to return by land, along the shores of the sea of *Okhotsk*, a journey almost as long, and certainly attended with more difficulties than that from *Okhotsk* to *Petersburg*.

The next day the governor, with all his *suite*, dined on board the *Astrolabe*, where he was also saluted

saluted with a discharge of thirteen guns; but he earnestly requested, that this compliment might be paid him no more, that in future we might see one another with more ease and comfort.

It was perfectly impossible to make him accept the value of the oxen. In vain did we represent, that we had paid the whole of our expences at Manilla, notwithstanding the strict alliance between France and Spain. Mr. Kasloff told us, that the principles of the Russian government were different, and that his only regret was the having so little cattle at his disposal. He invited us to a ball which he was to give the following day, on our account, to all the women, both Kamtschadales and Russians, of St. Peter and St. Paul's. If the assembly were not numerous, it was at least extraordinary. Thirteen women, dressed in silken stuffs, ten of the number being Kamtschadales, with broad faces, little eyes, and flat noses, were sitting on benches round the room. The Kamtschadales as well as the Russians had silk handkerchiefs tied round their heads, almost in the manner they are worn by the mulatto women in our West India islands. The ball began with Russian dances, of which the tunes were very pleasing, and very much like the country dance called *the Cossack*, that was in fashion at Paris a few years ago. The Kamtschadale dances that followed can only be compared to those of the *convulsionnaires*,

vulsonnaires, at the famous tomb of St. Medard *, the dancers having occasion for nothing but arms and shoulders, and scarcely for any legs at all. The Kamtschadale females, by their convulsions, and contracted motions, inspire the spectator with a painful sensation, which is still more strongly excited by the mournful cry that is drawn from the pit of their stomachs, and that serves as the only music to direct their movements. Their fatigue is such during this exercise, that they are covered with perspiration, and lie stretched out upon the floor, without the power of rising. The abundant exhalations that emanate from their bodies perfume the whole apartment with a smell of oil and fish, to which European noses are too little accustomed to find out its fragrance. As the dances of all these nations have ever been imitative, and in fact nothing but a sort of pantomime, I asked what two of the women, who had just taken such violent exercise, had meant to express. I was told that they had represented a bear-hunt. The woman who rolled on the ground acted the animal; and the other, who kept turning round her, the hunter; but if the bears could speak, and were to see such a pantomime, they would certainly complain of being so awkwardly imitated. This dance, almost as fa-

* The tomb of a pious abbé at Paris, where lame people were cured by being thrown into convulsions. T.

tiguing to the spectator as to the performer, was scarcely over, when a joyful exclamation announced the arrival of a courier from Okhotsk. He was the bearer of a large trunk filled with our packets. The ball was interrupted, and each of the females dismissed with a glass of brandy, a refreshment worthy of such votaries of Terpsichore. Mr. Kasloff, perceiving our impatience to learn the news of all that was interesting to us in Europe, entreated us not to defer the pleasure; conducted us to his own room; and retired, that he might not restrain the effusion of the different sentiments by which we might be affected, according to the news received by each from his family or friends. It was favourable to all, particularly to me, who, by a degree of favour to which I dare not to aspire, had been promoted to the rank of commodore. The compliments every one was eager to make me soon reached Mr. Kasloff, who was pleased to celebrate the event by a discharge of all the artillery of the place. To the last day of my life, I shall remember, with the strongest emotions of gratitude, the marks of friendship and affection which I received from him upon this occasion. I did not indeed pass a moment with him that was not marked by some trait of kindness or attention. It is needless to say, that as since his arrival all the inhabitants of the country were hunting and fishing for us, we were unable to consume the quantity

of provision furnished us. To this he added presents for M. de Langle and myself. We were forced to accept a Kamtschadalian sled for the king's cabinet of curiosities, and two royal eagles for the menagerie, as well as a great number of sable-skins. We offered him, in our turn, every thing that we thought useful or agreeable to him; but as we were only rich in commodities for the savage market, we had nothing worthy of such a benefactor: we begged him, however, to accept the narrative of Cook's third voyage, with which he was much pleased, especially as he had in his *suite* almost all the personages whom the editor has brought forward upon the stage—Mr. Schmaloff, the good vicar of Paratounka, and the unfortunate Ivaschkin. To them he translated all the passages that concerned them, and at the rehearsal of each they repeated that every word was strictly true. The serjeant alone, who then commanded at the harbour of St. Peter and St. Paul, was dead. The others enjoyed the best state of health, and still inhabited the country, except major Behm, who had returned to Petersburg, and Port, who resided at Irkoutsk. I testified my surprise to Mr. Kasloff at finding the aged Ivaschkin in Kamtschatka, the English accounts stating, that he had at length obtained permission to go and live at Okhotsk.

We could not help feeling great concern for the fate of this unfortunate man, when told that his
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only crime was some indiscreet expressions concerning the empress Elizabeth, at the breaking up of a convivial party, when his reason was disordered by wine. He was then under twenty, was an officer in the guards, belonged to a Russian family of distinction, and could boast of a handsome face, which neither time nor misfortune have been able to alter. He was cashiered, and banished to the interior of Kamtschatka, after having suffered the punishment of the knout, and had his nostrils slit. The empress Catherine, whose attentions are carried as far as the victims of preceding reigns, granted this unfortunate man a pardon several years ago : but a stay of more than fifty years in the midst of the vast forests of Kamtschatka ; the bitter recollection of the ignominious punishment he suffered ; perhaps, also, a secret sentiment of hatred against an authority which punished so cruelly a fault, that was rendered excusable by circumstances ; these various motives rendered him insensible to a tardy act of justice ; and he purposed ending his days in Siberia. We begged him to accept some tobacco, powder, shot, cloth, and every thing, in short, which we supposed useful to him. He had been educated at Paris, still understood a little French, and recollected a number of words expressive of his gratitude. He loved Mr. Kasloff like a father, and accompanied him in his journey out of affection ; while the good governor treated him with an attention well

calculated to make him forget his misfortunes*. He did us the favour of pointing out the grave of M. de la Croyère, whom he had seen buried at Kamtschatka in 1741. We placed over it the following inscription, engraved on copper, and composed by M. Dagelet, a member, like himself, of the Academy of Sciences:

Here lies Louis de l'Isle de la Croyère, of the Royal Academy of Sciences at Paris, who died in 1741, on his return from an expedition undertaken by command of the Czar, in order to explore the coast of America: as an astronomer and geographer, he was emulous of two brothers celebrated in the sciences, and was deserving of the regret of his country. In 1786, the Count

* The remembrance and the shame of an unjust punishment so pursued the unfortunate Ivafchkin, that he determined to hide himself from the eyes of strangers; and it was not till a week after the arrival of the frigates, that Lesseps found means to discover him. The interpreter, affected by his situation, gave an account of it to La Pérouse, who, admiring the noble disposition of the old man, and pitying his misfortune, requested to see him. It was with difficulty, and by means of Mr. Kasloff's influence over his mind, that he was prevailed on to quit his retreat. The amenity of manners of La Pérouse soon inspired Ivafchin with the greatest confidence; and the unfortunate man, who was ever mindful of the civilities he received, testified his gratitude still more strongly, when the French general made him a number of useful presents, of which he was in the greatest want.

This anecdote, which Lesseps has related to me several times, is not out of its place here.—(*Fr. Edit.*)

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de la Pérouse, commanding the king's frigates, the *Bouffole* and *Astrolabe*, did honour to his memory by giving his name to an island near the places visited by himself.

We also asked Mr. Kasloff's permission to engrave upon a plate of the same metal the inscription over the grave of captain Clerke, which was only written with a pencil upon wood, a matter too perishable to perpetuate the memory of so estimable a navigator. The governor had the goodness to add to the permission which he gave us a promise to erect without delay a monument more worthy of those two celebrated men, who paid the debt of nature in the midst of their arduous undertakings, at so great a distance from their native land. He told us, that M. de la Croyère had married at Tobolsk, and that his posterity enjoyed a great deal of consideration at that place. The history of the voyages of Behring, and captain Tichirikow, were familiar to Mr. Kasloff, who thence took occasion to tell us, that he had left Mr. Billings at Okhotsk, charged by the state to build two vessels for the purpose of continuing the Russian discoveries in the Northern seas. He had given orders, that all the means at his disposal should be employed to accelerate the expedition; but his zeal, his best endeavours, his earnest desire, to fulfil the wishes of the empress, did not suffice to overcome the obstacles, which necessarily presented

themselves in a country almost as savage as on the first day of its discovery, and where labour is suspended by the rigour of the climate for more than eight months in the year. He was of opinion, that it would have been more economical, and far more expeditious, to let Mr. Billings take his departure from some port in the Baltic, where he might have provided for all his wants for several years to come.

We took a plan of the bay of Avatscha, or, more correctly speaking, we verified that of the English, which is exceedingly correct; and M. Bernizet made a very elegant drawing of it, which he begged the governor to accept. M. Blondela also offered him a view of the Ostrog; and the abbes Monges and Receveur made him a present of a small box of acids for the analysis of mineral waters, and the ascertainment of the different substances of which the soil of Kamtschatka is composed. Mr. Kasloff was no stranger to the sciences of chemistry and mineralogy: he had indeed a particular taste for chemical experiments; but he convinced us, by reasons of which the force is easily felt, that previously to attending to the minerals of an uncultivated country, it was the part of a wise and enlightened administration to endeavour to procure the inhabitants bread, by accustoming them to agricultural labours. The rapidity of vegetation bespoke great fertility of soil, and he did not doubt, that it would produce abundant

dant crops of rye or barley, in case of the failure of wheat, which might be prevented from shooting by the severity of the winter. He made us remark the promising appearance of several small fields of potatoes, of which the seed had been brought from Irkoutsk a few years before; and purposed to adopt mild, though infallible means, of making farmers of the Russians, Cossacks, and Kamtschadales. The small-pox in 1769 swept away three fourths of the individuals of the latter nation, which is now reduced to less than four thousand persons, scattered over the whole of the peninsula; and which will speedily disappear altogether, by means of the continual mixture of the Russians and Kamtschadales, who frequently intermarry. A mongrel race, more laborious than the Russians, who are only fit for soldiers, and much stronger, and of a form less disgraceful to the hand of nature, than the Kamtschadales, will spring from these marriages, and succeed the ancient inhabitants. The natives have already abandoned the *yourts*, in which they used to burrow like badgers during the whole of the winter, and where they breathed an air so foul as to occasion a number of disorders. The most opulent among them now build *ibas*, or wooden houses, in the manner of the Russians. They are precisely of the same form as the cottages of our peasants; are divided into three little rooms; and are warmed by a
brick

brick stove, that keeps up a degree of heat* insupportable to persons unaccustomed to it. The rest pass the winter as well as the summer in *balagans*, which are a kind of wooden pigeon-houses, covered with thatch, and placed upon the top of posts twelve or thirteen feet high, to which the women as well as the men climb by means of ladders that afford a footing very insecure. But these latter buildings will soon disappear; for the Kamtschadales are of an imitative genius, and adopt almost all the customs of their conquerors. Already the women wear their hair, and are almost entirely dressed, in the manner of the Russians, whose language prevails in all the *ostrogs*; a fortunate circumstance, since each Kamtschadalian village spoke a different jargon, the inhabitants of one hamlet not understanding that of the next. It may be said in praise of the Russians, that, though they have established a despotic government in this rude climate, it is tempered by a mildness and equity, that render its inconveniencies unfelt. They have no reproaches of atrocity to make themselves, like the English in Bengal, and the Spaniards in Mexico and Peru. The taxes they levy on the Kamtschadales are so light, that they can only be considered as a mark of gratitude towards the sovereign, the produce of half a day's hunting acquitting

* Not less than thirty degrees of Reaumur's thermometer.

the imposts of a year. It is surprising to see in cottages, to all appearance more miserable than those of the most wretched hamlets in our mountainous provinces, a quantity of species in circulation, which appears the more considerable, because it exists among so small a number of inhabitants. They consume so few commodities of Russia and China, that the balance of trade is entirely in their favour, and that it is absolutely necessary to pay them the difference in rubles. Furs at Kamtschatka are at a much higher price than at Canton, which proves, that as yet the market of Kiatcha has not felt the advantageous effect of the new channel opened in China. The Chinese merchants are, no doubt, careful, to let these furs run off in an imperceptible stream, and thus to make enormous gains; for at Macao they bought of us for ten piastres what was worth a hundred and twenty at Peking. An otter skin is worth at St. Peter and St. Paul's thirty rubles; a sable three or four: the price of fox skins cannot be fixed, I do not mean black foxes, which are too scarce to become the subject of calculation, and which are sold for more than a hundred rubles a-piece. The white and grey vary from two to twenty rubles according as they approach to black or red, which last only differ from those of France by the softness and thickness of their fur.

The English, who, by the happy constitution of their company, have it in their power to leave to the

the private trade of India all the activity of which it is susceptible, sent a small vessel last year to Kamtschatka. It was fitted out by a commercial house of Bengal, and commanded by captain Peters, who sent colonel Kasloff a letter in French, which he gave me to read. The English captain, upon the plea of the strict alliance which unites the two courts in Europe, requested permission to trade with Kamtschatka, by bringing thither the different commodities of India and China, such as stuffs, sugar, tea, and arrack, and taking the furs of the country in return. Mr. Kasloff was too enlightened a man not to perceive that such a proposition was ruinous to the commerce of Russia, which sold the same articles to the Kamtschadales at a great profit, and made a still greater upon the skins which the English wished to export; but he knew also, that certain limited permissions had sometimes been given to the detriment of the empire at large, for the increase of a colony, which afterwards enriches the mother country, when it has risen to such a pitch as to have no farther occasion for foreign commerce. These considerations prevented Mr. Kasloff from deciding the question; and he permitted the English to transmit their proposition to the court of Petersburg. He was sensible however, that, even if their request were granted, the country consumed too little of the commodities of India and China, and found too good a market for its furs at Kiatcha, for the Bengal merchants

merchants to find it a profitable speculation. Besides, the very vessel that brought these commercial overtures was wrecked on Copper Island, a few days after going out of the bay of Avatscha, and only two men saved, to whom I spoke, and furnished some articles of clothing, of which they stood in great need. Thus captain Cook's ships and our own are the only ones which have yet made a fortunate voyage to this part of Asia.

It would be incumbent on me to give the reader a more particular account of Kamtschatka, if the works of Coxe and Steller did not afford ample satisfaction*. The editor of *captain Cook's third voyage* has had recourse to these sources, and has given a new degree of interest to every thing relative to the country, about which more has been written than concerning several of the interior provinces of Europe, and which, as to climate and the productions of the soil, may be compared to the coast of Labrador in the vicinity of the Straits of Belle-Isle; but the men, like the animals, are there very different. The Kamtschadales appeared to me the same people as those of the bay of Castries, upon the coast of Tartary. Their mildness and their probity are the

* Very curious particulars, which deserve to be compared with those given by Coxe and Steller, have been furnished by Lesseps in his interesting *Travels from Kamtschatka to France*, published in English by Johnson, St. Paul's Church Yard.

same,

same, and their persons are very little different. They ought then no more to be compared to the Esquimaux Indians, than the fables of Kamtschatka to the martins of Canada.

The bay of Avatscha is certainly the finest, the most convenient, and the safest, that is to be met with in any part of the world. The entrance is narrow, and ships would be forced to pass under the guns of the forts that might be easily erected. The bottom is mud, and excellent holding ground. Two vast harbours, one on the eastern side, the other on the western, are capable of containing all the ships of the French and English navy. The rivers of Avatscha and Paratoumka fall into this bay, but they are choaked up with sand-banks, and can only be entered at the time of high water. The village of St. Peter and St. Paul is situated upon a tongue of land, which, like a jetty made by human art, forms behind the village a little fort, shut in like an amphitheatre, in which three or four vessels might lie up for the winter. The entrance of this sort of basin is more than twenty-five toises wide; and nature can afford nothing more safe or commodious. It is on its shore that Mr. Kasloff purposes laying down the plan of a city, which some time or other will be the capital of Kamtschatka, and perhaps the centre of an extensive trade with China, Japan, the Phillippines, and America. A vast pond of fresh water is situated northward of the site of this projected city; and at only

only three hundred toises distance run a number of streamlets, the easy union of which would give the ground all the advantages necessary to a great establishment. Of these advantages Mr. Kasloff understood the value; "but first," said he a thousand times over, "we must have bread and hands, and our stock of both of them is very small." He had, however, given orders, which announced a speedy union of the other *ostrogs* to that of St. Peter and St. Paul, where it was his intention immediately to build a church. The Greek religion has been established among the Kamtschadales without persecution or violence, and with extraordinary facility. The vicar of Paratounka is the son of a Kamtschadale and of a Russian woman. He delivers his prayers and catechism with a tone of feeling very much to the taste of the aborigines, who reward his cares with offerings and alms, but pay no tithes. The canons of the Greek church permitting priests to marry, we may conclude that the morals of the country clergymen are so much the better. I believe them, however, to be very ignorant; and do not suppose, that for a long time to come they will stand in need of greater knowledge. The daughter, the wife, and the sister of the vicar, were the best dancers of all the women, and appeared to enjoy the best state of health. The worthy priest knew that we were good catholics, which procured us an ample asperision of holy water; and he also made us kiss
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the cross that was carried by his clerk : these ceremonies were performed in the midst of the village. His parsonage-house was a tent, and his altar in the open air ; but his usual abode is Paratounga, and he only came to St. Peter and St. Paul's to pay us a visit.

He communicated to us a number of particulars concerning the Kuriles, of which he is also vicar, and of which he makes the tour once a year. The Russians have found it convenient to substitute numbers to the ancient names of those islands, concerning which authors are much at variance with one another. They now call them N° 1, N° 2, &c. as high as twenty-one, which last terminates the pretensions of Russia. According to the report of the vicar, it is very likely, that this last is the island of Marikan ; but I am not very sure of it, because the good priest was exceedingly diffuse. We had, however, an interpreter who understood the Russian language as well as French ; but Mr. Lesséps thought, that the good priest did not understand himself. The following particulars, concerning which he did not vary, may be nevertheless considered as almost certain. Of the twenty-one islands belonging to Russia, four only are inhabited—the first, the second, the thirteenth, and the fourteenth. The last two may indeed be counted only as one, because the inhabitants all pass the winter upon N° 14, and return to N° 13 to pass the summer months. The
others

others are entirely uninhabited, the islanders only landing there occasionally from their canoes for the sake of hunting foxes and otters. Several of these last mentioned islands are no better than large rocks, and there is not a tree on any one of them. The currents are very violent between the islands, particularly at the entrance of the channels, several of which are blocked up by rocks on a level with the sea. The vicar never made the voyage from Avatscha to the Kuriles in any thing but a canoe, which the Russians call *baidar*; and he told us, that he had several times been very nearly lost, and still nearer dying of hunger; having been driven out of sight of land; but he is persuaded, that his holy water and his cassock delivered him from the danger. The population of the four inhabited islands amounts at most to fourteen hundred souls. The inhabitants are very hairy, wear long beards, and live entirely upon seals, fish, and the produce of the chase. They have just been exempted for ten years from the tribute usually paid to Russia, because the number of otters on their islands is very much diminished. These poor people are good, hospitable, and docile, and have all embraced the Christian religion. The more southern and independent islanders sometimes pass in canoes the channels that separate them from the Russian Kuriles, in order to give some of the commodities of Japan in exchange for peltries. These islands are part of Mr. Kasloff's government; but

as the landing is very difficult, and as they are of little consequence to Russia, he did not purpose visiting them; and, although he expressed some regret for having left a chart of them at Bolcheretsk, he did not appear to put much confidence in its accuracy. At the same time he seemed to place so much in us, that we could have wished to communicate to him the particulars of our expedition. His remarkable discretion in that respect deserves our praise.

We gave him, however, some little account of our voyage; and did not conceal from him, that we had doubled Cape Horn, visited the north-west coast of America, and put in at China, and the Philippines, whence we were come to Kamtschatka. We did not allow ourselves to enter into any farther details, but I assured him, that if the publication of our discoveries should be ordered by government, I would send him one of the first copies of the work. I had already obtained permission to send my journal to France by M. Lesséps, our young interpreter. My confidence in Mr. Kasloff and in the Russian government was such, that I should have been free from all uneasiness if I had been obliged to put my packet in the post-office; but I thought I should render a service to my country by giving M. de Lesséps an opportunity of making his own observations on the different provinces of the Russian empire, where he will probably on some future day

fill the place of his father, our consul-general at Petersburg. Mr. Kasloff told me kindly, that he would take him as his aid-de-camp as far as Okhotsk, whence he would furnish him with the means of proceeding to Petersburg, and that from the present moment he should consider him as one of his family. So great a favour, so obligingly conferred, is felt more strongly than it is expressed; and it made us lament his absence at Bolcheretzk during part of our stay in the bay of Avatscha.

The cold gave us warning to depart. The ground, which on our arrival on the 7th of September, was covered with the most beautiful verdure, was as yellow and as much parched up on the 25th of the same month, as it is in the environs of Paris at the latter end of December; while the mountains of two hundred toises elevation above the level of the sea were covered with snow. I therefore gave orders to prepare every thing for our departure, and on the 29th got under way. Mr. Kasloff came to take leave of us, and as the calm forced us to bring up in the middle of the bay, dined on board. I accompanied him on shore with M. de Langle and several officers, and there he gave us a good supper, and another ball. The next morning at day-break, the wind having shifted to the northward, I made the signal for sailing; and before we were well under way, heard a discharge of all the cannon of St. Peter and St.

Paul's. I ordered a return to be made to this salute, which was repeated when we were at the mouth of the bay, the governor having sent a detachment of foldiers to pay us the honours of departure at the instant when we should pass the little battery to the north of the lighthouse that stands at the entrance.

It was not without emotion that we parted with M. de Lesseps, whose good qualities had endeared him to us all, and whom we left in a foreign land at the moment of his undertaking a journey equally long and laborious*. We carried away with us a grateful remembrance from this country, with the certitude that the laws of hospitality had never been more fully observed in any country, or in any age.

* I refer the curious reader for more ample details to de Lesseps's journal: he will there see an interesting account of all the interpreter underwent in the route from the harbour of St. Peter and St. Paul to Paris, and of the care he took to fulfil his mission, and to convey to France one of the most valuable parts of la Pérouse's voyage. — (*Fr. Ed.*)

CHAPTER XXIII.

Summary account of Kamtschatka.—Marks for sailing in and out of the bay of Avatscha.—We run down the latitude $37^{\circ} 30'$, for a space of three hundred leagues, in search of land, said to be discovered by the Spaniards in 1620.—We cross the line for the third time.—We make the island of Navigators after having passed by the island of Danger, discovered by Byron.—We are visited by a number of canoes, barter with the Indians, and anchor at the island of Maouna.

(SEPTEMBER and OCTOBER 1787.)

IT is not to foreign navigators, that Russia owes her discoveries and her establishments on the coast of Oriental Tartary, and on that of the peninsula of Kamtschatka. The Russians, as eager after peltry as the Spaniards after gold and silver, have for a long time undertaken the longest and most difficult journies by land, in order to procure the valuable spoils of the sable, the fox, and the sea-otter; but being rather soldiers than hunters, they found it more convenient to impose a tribute upon the natives of the countries they subdued, than to share with them in the fatigues of the chase.

They did not discover the peninsula of Kamtschatka till towards the close of the last century, their first expedition against the liberty of its wretched inhabitants having taken place in 1696. The authority of Russia was not fully acknowledged throughout the peninsula till 1711, when the Kamtschadales accepted the conditions of a tribute very little onerous, and scarcely sufficing to pay the expences of administration. Three hundred sables, two hundred red or grey fox, and a few otter skins, make up the whole revenue of Russia in that part of Asia, where she stations about four hundred soldiers, mostly Cossacks and Siberians, and several officers who command in the different districts.

The court of Russia has several times changed the form of government in the peninsula. That which the English found established in 1778 no longer existed in 1784. Kamtschatka then became a province of the government of Okhotsk, which is itself a dependency of the sovereign court of Irkoutsk.

The *ostrog* of Bolcheretsk, formerly the capital of Kamtschatka, where major Behm resided at the time the English arrived, is now only governed by a serjeant of the name of Martinof. Mr. Kaborof, a lieutenant, commands, as I have already said, at St. Peter and St. Paul's; major Elleonoff at Nijenei-Kamtschatka, or the *ostrog* of Lower Kamtschatka;

Kamtschatka; and lastly Verknei, or Upper Kamtschatka, is under the command of serjeant Momayeff. These several commandants are under no responsibility to one another; but each renders his own account directly to the governor of Okhotsk, who has established an inspector with the rank of major, and with a particular command over the Kamtschadales, no doubt to protect them against the presumed oppression of the military government.

This first view of the commerce of these countries would give but a very imperfect idea of the advantages that Russia derives from its colonies in the eastern parts of Asia, if the reader were not aware, that expeditions by land have been followed by voyages eastward of Kamtschatka towards the coasts of America. Those of Behring, and Tschirikow are known to all Europe. After the names of these men rendered famous by their adventurous expeditions, and by the misfortunes that eventually attended them, those of several other navigators may be mentioned, who have added to the possessions of Russia the Aleutian Islands, the cluster to the east known by the name of Oonalashka, and all the islands to the south of the peninsula.

Captain Cook's last voyage suggested expeditions still farther eastward; but I was told at Kamtschatka, that the natives of the countries where the Russians landed had refused to pay them tri-

bute, and even to have any dealing with them. The latter probably were injudicious enough to let them perceive the design they had formed of subduing them; and every one knows how proud the Americans are of their independence, and how jealous of their liberty.

Russia has been at very little charge in extending her dominions. Commercial houses fit out vessels at Okhotsk, where they are built at enormous expence. They are from forty-five to fifty feet long, with a single mast in the middle, much like our cutters, and carry forty or fifty men, who are all better hunters than seamen. They sail from Okhotsk in the month of June, generally pass between the point of Lopatka, and the first of the Kuriles, steer eastward, and continue for three or four years to run from island to island, till they have either bought of the natives, or killed a sufficient number of otters themselves, to pay the expence of the out-fit, and to afford the merchants a profit of *cent per cent* upon the capital advanced.

Russia has not yet made any permanent establishment eastward of Kamtschatka: each vessel forms a temporary one in the port where it winters, and when it sails either destroys or gives it up to some other vessel belonging to the nation. The governor of Okhotsk strictly enjoins the captains of these cutters to make all the islanders they visit acknowledge the authority of Russia, and he em-
barks

barks on board each vessel a sort of custom-house officer commissioned to impose and levy a duty for the crown. I was told, that a missionary was to set off from Okhotsk without delay, in order to preach the Christian religion to the people that have been subjugated, and thus to make them some sort of compensation by spiritual gifts for the tribute they exact by right of superior power.

It is well known, that furs fetch a very high price at Kiatcha, upon the frontiers of China and Russia; but it is only since the publication of Mr. Coxe's work, that we have been acquainted in Europe with the importance of that article of commerce, of which the exportation and importation fall little short of eighteen millions of livres * a year. I was assured that twenty-five vessels, the crews amounting to about a thousand men, Kamtschadales, Russians, and Cossacks, had been sent this very year in quest of furs to the eastward of Kamtschatka. These vessels will disperse themselves from Cook's river to Behring's island. Long experience has taught them, that the otters scarcely ever frequent the latitudes farther north than the 60th degree; a circumstance that directs all the adventurers towards the peninsula of Alashka, or still farther east, but never to Behring's straits, which are obstructed by everlasting ice.

When these vessels come back they sometimes put in at the bay of Avatscha; but always return

* £. 750,000.

ultimately

ultimately to Okhotsk, the usual residence of their owners, and of the merchants who go to trade directly with the Chinese upon the frontiers of the two empires. As the ice leaves the entrance of the bay of Avatscha open at all times, the Russian navigators generally put in there when the season is too far advanced for them to arrive at Okhotsk before the end of September; a very wise regulation of the empress of Russia having forbidden the navigation of the sea of Okhotsk after that epoch, at which those hurricanes and gales of wind begin that have occasioned very frequent shipwrecks in that quarter.

The ice never extends in the bay of Avatscha farther than three or four hundred toises from the shore; and it often happens, during the winter, that the land winds drift away that which blocks up the mouths of the rivers of Paratounka and Avatscha. The navigation of these rivers then becomes practicable.

As the winter is generally less severe in Kamtschatka, than it is at Petersburg, and in several provinces of the Russian empire, the Russians generally speak of it as the French do of that of Provence; but the snow which surrounded us as early as the 20th of September, the white frost that covered the ground every morning, and the grass, as completely withered as that of the environs of Paris in the month of January, all combined to indicate a winter

ter of which the severity must be insupportable to the inhabitants of the south of Europe.

We were, however, in some respects less chilly than the Russian and Kamtschadale inhabitants of the *ostrog* of St. Peter and St. Paul. They were clothed with the thickest skins, and the temperature of their *isbas*, in which stoves are constantly burning, was from twenty-eight to thirty degrees above the freezing point. The heated air deprived us of respiration, and obliged the lieutenant to open the windows whenever we were in his apartment. The people of this country have inured themselves to the extremes of heat and cold. It is well known, that their custom, in Europe as well as in Asia, is to go into vapour baths, come out covered with perspiration, and immediately roll themselves in the snow. The *ostrog* of St. Peter had two of these public baths, into which I went before the fires were lighted. They consist of a very low room, in the middle of which is an oven constructed of stones, without cement, and heated like those intended to bake bread. Its arched roof is surrounded by seats one above another, like an amphitheatre, for those who wish to bathe, so that the heat is greater or less, according as the person is placed upon a higher or lower bench. Water thrown upon the top of the roof, when heated red-hot by the fire underneath, is converted instantly into vapour, and excites the most profuse perspiration.

ration. The Kamtschadales have borrowed this custom, as well as many others, from their conquerors; and ere long the primitive character that distinguished them so strongly from the Russians will be entirely effaced. Their population at present does not exceed four thousand souls, scattered over the whole peninsula, which extends from the fifty-first to the sixty-third degree of latitude, and occupies several degrees of longitude. Hence it appears, that there are several square leagues for each individual. They cultivate no one production of the earth; and the preference they give to dogs over rein-deer in drawing their sledges, prevents their breeding either hogs, sheep, rein-deer, horses, or oxen, because these animals would be devoured before they could acquire sufficient strength to defend themselves. Fish is the principal food of their draught dogs, which go notwithstanding as much as twenty-four leagues a day. They are never fed till they come to their journey's end.

The reader has already seen, that this manner of travelling is not peculiar to the Kamtschadales. The people of Tchoka, and the Tartars of the bay of Castries use no other cattle. We were exceedingly desirous to know whether the Russians were at all acquainted with those countries, and were told by Mr. Kasloff, that the Okhotsk vessels had several times perceived the north end of the

island, at the mouth of the great river Amur, but that they had never landed, because it is beyond the limits of the Russian establishments upon that coast.

The bay of Avatscha very much resembles that of Brest; but it affords much better holding ground, its bottom being mud. Its entrance is also narrower, and consequently more easy to defend. Our lithologists and botanists found neither mineral nor vegetable substances upon its shores, but such as are exceedingly common in Europe. The English have published a very good chart of this bay. Attention should be paid to two banks, situated east and west of the entrance, and separated by a large channel for vessels to pass through. They may be avoided with certainty by keeping two insulated rocks on the east coast open with the light-house point, and by shutting in with the west coast a large rock on the larboard hand, which is only separated from the land by a passage not more than a cable's length in width. All the anchorage in the bay is equally good; and ships may approach more or less near to the *ostrog*, according to the intercourse they wish to keep up with the shore.

According to the observations of M. Dagelet, the house of lieutenant Kabroof is situated in $53^{\circ} 1'$ north latitude, and $156^{\circ} 30'$ east longitude. The tides are very regular. It is high water at half past three, at the time of full and change of the moon,

moon, the rise in the harbour being four feet. We observed that our time-keeper, No. 19, lost 10" a day, which differed 2" from the daily loss attributed to the same at Cavite six months before.

The north wind, which was so favourable to our sailing out of the bay of Avatscha, deserted us when we were two leagues in the offing. It shifted to the west, and continued to blow with an obstinacy and violence, which did not permit me to follow my plan of reconnoitring, and laying down the latitude and longitude of the Kuriles, as far as the isle of Marikan. The gales of wind and squalls followed each other so rapidly, that I was often obliged to lay to under the foresail, and found myself driven eighty leagues from the land. I did not attempt to struggle against these obstacles, the reconnoitring of the Kurile islands being of little importance; but steered a course so calculated as to cross the parallel of latitude of $37^{\circ} 30'$ in the longitude of 165° , where several geographers have placed a large, rich, and well-peopled island, said to have been discovered by the Spaniards in 1620. A search after this island made part of captain Uriès' instructions; and there is also a paper with some particulars concerning it, in the fourth volume of the academical collection, under the foreign head. It appeared to me, that among the different objects of research rather indicated than ordered by my instructions, this deserved a preference. I did not

not reach the latitude $37^{\circ} 30'$ till the 14th, at midnight, in the course of which day we had seen several small land birds of the linnet genus settle upon our rigging. The same evening we also perceived two flights of ducks, or corvorants, birds which scarcely ever wander far from land. The weather was very clear, and in both frigates we had men constantly upon the look-out from the mast-head, a reward somewhat considerable being promised to him who should first see land. This motive of emulation was little necessary, every sailor being eager for the honour of discovering an island, which, according to my promise, was to bear his name. But, notwithstanding the certain indications of our being near land, we discovered nothing, although the horizon was very extensive. I supposed that the island in question must lie farther south, and that the violent gales that had recently blown from that quarter, had driven northward the little birds that we had observed to settle upon our rigging. I therefore steered a south course till midnight. Being then exactly, as I have said above, in $37^{\circ} 30'$ latitude north, I gave directions to steer due east, under very easy sail, waiting for the day with the utmost impatience. It was done, and we again saw two small birds. I continued an east course, and the same evening a large turtle passed along-side of the ship. The following day, still running down the same parallel towards the east,

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we saw a bird, smaller than the European wren, perched upon the main-top-sail yard arm, and a third flight of ducks. Thus were our hopes every moment kept up; but we never had the good fortune to see them realized*.

During this search we met with a real misfortune. A seaman fell overboard from the *Astrolabe* while furling the mizen-top-gallant-sail. Whether he was wounded in his fall, or could not swim, I know not; but he never rose again, and all our efforts to save him were of no avail.

The signs of land continued on the 18th and 19th, although we had made a long run to the eastward. We perceived flights of ducks and other birds that frequent the shore: a soldier even pretended that he saw some small bits of sea-weed (*goemon*) float by; but as this fact was supported by no other testimony, we rejected it unanimously, preserving nevertheless the

* Was la Pérouse ignorant, that the parallel of $37^{\circ} 30'$ north had been run down to no purpose, for a space of 450 miles, towards the east of Japan, by the ship *Kastricum*? Or was he afraid to depart from his instructions, and from the indication given him in the forty-eighth geographical note inserted in the first volume? Whatever motive may have determined his conduct, it is matter of regret, that la Pérouse did not follow the 37th or 38th parallel of latitude. The land discovered in former times having been almost all discovered in our own, this island will certainly be the object of new researches; and there is reason to hope it will be found by running down the parallel of $36^{\circ} 30'$.—(Fr. Ed.)

strongest hopes of speedily making land. Scarcely had we reached the 175th degree of east longitude, when all these signs disappeared. I continued, however, the same course till the 22d at noon; but at that epoch the longitude indicated by the time keeper, No. 19, placing me at 20' beyond 180° east of Paris, the limits prescribed for the search of the island in question, I ordered a southerly course to be steered, in order to meet with less stormy seas. Since our departure from Kamtschatka we had constantly navigated in the midst of a very heavy swell; and at one time a sea washed away our jolly-boat, though lashed to the gangway, and threw more than twenty tons of water aboard. These little accidents would hardly have been noticed, had we been fortunate enough to meet with the island, the search of which had cost us so much fatigue, and which certainly exists in the neighbourhood of the course we steered. The signs of land were too frequent, and of too decided a nature, to permit us to doubt it. I am inclined to think, that we ran down too northerly a parallel; and were I to begin the same search again, I should follow the parallel of 35°, from 160 to 170° of longitude. In that space it was, that we perceived the greatest number of land birds, which appeared to me to come from the south, and to have been driven to sea by the violence of the gales that had blown from that quarter. The farther objects of

my voyage did not give me time to verify this conjecture, by running as far westward as we had just run east. The wind, which blows almost invariably from the west, would have made me consume more than two months in a passage that I had made in eight days. I therefore shaped my course towards the southern hemisphere, in that vast field of discoveries where the tracks of Quiros, Mendana, Tasman, &c. are crossed in every direction by those of modern navigators, and where every one of the latter has added some new islands to those which were already known; but concerning which the curiosity of Europeans still desired more circumstantial details, than those given in the narratives of the earlier navigators. It is well known, that in that vast part of the great equatorial ocean there exists a zone, from 12 to 15 degrees, from north to south, and of 140 degrees from east to west, interspersed with islands, which are upon the terrestrial globe what the milky way is in the heavens. The language and manners of their inhabitants are no longer unknown to us; and the observations that have been made by the last circumnavigators even enable us to form probable conjectures concerning the origin of these people, which may be attributed to the Malays, as that of the different colonies on the coasts of Africa and Spain is to the Phenicians. It was in this Archipelago that my instructions directed me to navigate during the third year of my expedition.

expedition. The western and southern part of New Caledonia, of which the east coast was discovered by captain Cook in his second voyage; the southern isles of the Archipelago of the Arfacides, of which the northern ones were seen by Surville; the northern part of the land of la Louisiade, which M. Bougainville had been unable to explore, but of which he had been the first to run down the south-east coast; such were the geographical points, that had principally attracted the attention of government; and I was enjoined to mark their limits, and to determine their precise latitude and longitude. The Society, and Friendly islands, the New Hebrides, &c. were known, and could no longer excite the curiosity of Europe; but as they afforded resources in provision, I was allowed to put in there according to the want I might be in; it having been presumed with great reason, that, on leaving Kamtschatka, I should have a very small proportion of fresh stock, which is so necessary for the preservation of seamen's health.

It was impossible for me to get speed to the southward soon enough to avoid a gale of wind which blew from that quarter on the 23d of October. The sea ran exceedingly high, and we were obliged to lay to all night under the fore-sail. The winds were very variable, and the sea very much agitated as far as the 30th degree of latitude, a parallel which we reached on the 29th of October.

The health of most of us was affected by the too sudden passage from cold to intense heat; but we experienced only slight disorders, which did not oblige any one to keep his bed.

On the first of November, being in $26^{\circ} 27'$ north latitude, and $175^{\circ} 38'$ east longitude, we saw a great number of birds; among others, curlews and plovers, two species which never fly far from land. The weather was thick and squally; but all the parts of the horizon successively cleared up, except towards the south, where some large clouds remained constantly fixed; which made me think it likely that there was land in that point of the compass. I steered my course accordingly, and for two or three days we continued to see birds. By degrees, however, the signs of land left us; but it is probable, that we passed by some island or flat rock, of which we did not get sight; but which chance will perhaps present to future navigators. We now began to enjoy a serene sky, and it became at last possible to find the longitude by lunar observations, which we had not been able to do since our departure from Kamtschatka. The longitude by observation was a degree farther west than that which was given by our time-keeper No. 19.

We caught several doradoes and two sharks, and found them delicious eating, because we were all reduced to salt pork, which began to suffer from the influence of a burning climate. We repeated our
lunar

lunar observations, and the difference was constantly the same. Having at length reached the tropic, the sky became clearer, and our horizon was of great extent; but we perceived no land, though we every day saw birds, which are never met with at a great distance from the shore. On the 4th of November, being in $23^{\circ} 40'$ north latitude, and in $175^{\circ} 58' 47''$ of west longitude, according to a series of observations made that very day, we caught a golden plover, which was still moderately fat, and which could not have been wandering long at sea. The 5th we crossed our own tract from Monterey to Macao; the 6th that of captain Clerke from the Sandwich islands to Kamtschatka, by which time the birds had entirely disappeared. Our ships laboured exceedingly by reason of a heavy swell from the east, which, like that from the west in the Atlantic ocean, constantly prevails in this vast sea. Neither bonetas nor doradoes came in our way, nor any thing, indeed, but a few flying fish; a grievous circumstance, as our fresh provision was entirely consumed in consequence of our depending rather too much upon the salt element for the improvement of our unpalatable fare. The 9th we passed by the south point of the shoal, or flat of Villa Lobos, according at least to the position assigned to it in the charts presented to me by M. Fleurieu. I proportioned my canvas in such a way as to cross its latitude in the day-time; but as we perceived neither birds nor weeds, I am in-

clined to think, that, if such a shoal exist, it must be in a more western position, the Spaniards having always placed their discoveries in the great Pacific ocean too near to the American coast. At this time the sea became somewhat smoother, and the breezes more moderate; but the sky was covered with thick clouds, and scarcely had we reached the 10° degree of north latitude, when it began to rain almost incessantly, at least during the day; for the nights were tolerably fine. The heat was suffocating, and the hygrometer had never indicated more humidity since our departure from Europe. We were breathing an air destitute of elasticity, which, joined to unwholesome aliments, diminished our strength, and would have rendered us almost incapable of exertion, if circumstances had required it. I redoubled my care to preserve the health of the crew during this crisis, produced by too sudden a passage from cold, to heat and humidity. I had coffee served out every day for breakfast; and I ordered the ship to be dried and ventilated between decks; while the rain-water served to wash the sailors shirts. Thus did we turn to account even the unfavourable temperature of the climate which we were obliged to cross, and of which I dreaded the influence more than that of all the high latitudes that had occurred in the course of our voyage. On the 6th of November, for the first time we caught eight bonetas, which furnished a good repast to the whole crew, and to the officers, who, as well as myself,

myself, had no longer any provision but that of the hold. The rain and storms ceased, and the heavy sea subsided about the 15th, when we had reached the 5° of north latitude. We then enjoyed a clear sky; a very extensive horizon made us easy about the night's run; and the air was so pure, the heavens so serene, and the light thence resulting so strong, that we could have perceived any danger as plainly as in open day. This fine weather accompanied us beyond the equator, which we crossed on the 21st of November, for the third time since we took our departure from Brest. We had been three times at the distance of about 60° from it to the north or south; and, according to the further plan of our voyage, we were not to revisit the northern hemisphere till we should enter the Atlantic ocean in our way back to Europe. Nothing interrupted the monotony of this long run. We were steering a course nearly parallel to that which we had steered the preceding year in our passage from Easter island to those that bear the name of Sandwich. During that passage we had been constantly surrounded with birds and bonetas, which afforded us wholesome and abundant food: in the present one, on the contrary, a vast solitude reigned around us, both the air and water of this quarter of the globe being nearly destitute of inhabitants. On the 23d, however, we caught two

sharks, which afforded two meals to the crew, and we shot on the same day a very lean curlew, apparently much fatigued. We supposed that it came from the duke of York's island, from which we were about 100 leagues distant. It was hashed up and eaten at my table; and was scarcely better than the sharks. In proportion as we advanced in the southern hemisphere, the noddies, man-of-war birds, terns, and tropic birds, flew more frequently round the ships. We took them for the harbingers of some island, which we were exceedingly impatient to fall in with; and murmured much at the fatality, that had prevented our making the smallest discovery in the long line we had run down since our departure from Kamtschatka. These birds, which became innumerable when we had reached the fourth degree of south latitude, inspired us every moment with the hopes of making land; but, although the horizon was of prodigious extent, none could we see. We made, it is true, but little way. While we were under the second degree of south latitude, the breeze abandoned us, and was succeeded by light airs of wind from N. to W. N. W., of which I availed myself to gain a little easting, being afraid of falling to leeward of the Friendly islands. During these calms we caught several sharks, which we preferred to salt-meat, and shot sea-birds, which we hashed. Though very lean, and smelling and tasting of fish

to a degree that was insupportable, they appeared to us, in our present want of fresh provisions almost as good as woodcocks. Black *goelettes*, and others entirely white, which I believe peculiar to the South sea, as I never saw any in the Atlantic ocean, were so plenty that we killed more of them than of noddies, or man-of-war birds. And yet the latter flew round the ships in such numbers, especially during the night, that we were stunned by the noise they made, and could with difficulty hear each other speak upon the quarter-deck. Our sport, which was tolerably successful, punished their insults, and afforded us tolerable food; but when we had passed the 6° they entirely disappeared. The light winds from N. W. to W., which had set in about the 3d degree of south latitude, then gathered strength, and did not give over blowing till we had reached the 12th. A heavy swell from the west rendered our navigation exceedingly fatiguing; our cordage, rotted by the constantly wet weather we had experienced while exploring the coast of Tartary, kept breaking every moment; and, as we were fearful of exhausting our stock, was not replaced till the last extremity. Till the 2d of December, when we reached 10° 50', squalls, storms, and rain constantly accompanied our course. The wind, though still blowing from the west, then grew more moderate; and as the weather cleared up, we were enabled to make lunar observations, in order to rectify the error of our time-

time-keepers. Since our departure from Kamtschatka, they appeared to have lost five minutes of time, or, in other words, to indicate the longitude $1^{\circ} 15'$ too far east. According to the above astronomical observations, of which the result was $170^{\circ} 7'$ of longitude west, we passed exactly over the spot where Byron's islands of Danger are laid down; for we were exactly in their latitude: but as we neither saw land, nor the smallest sign of there being any near us, it is evident, that their longitude has been mistaken; which was the more easy, as Byron regulated his navigation by the defective method of a dead-reckoning. The following day, December the 2d, we were in $11^{\circ} 34' 47''$ south latitude, and $170^{\circ} 7' 1''$ longitude west, according to astronomical observation, precisely in the same parallel of latitude as Quiros's Island of the Handsome Nation, and one degree farther east. I would willingly have run a few degrees westward in order to fall in with it; but the wind blew directly from that quarter; and the island is laid down in too uncertain a manner to be sought for by working to windward. I therefore thought it better to avail myself of the western gale, in order to reach the parallel of Bougainville's Navigators Islands, a discovery due to the French, where we might hope to procure fresh provision, of which we were in the greatest want.

On the 6th of December, at three in the afternoon,

noon, we got sight of the most easterly island of that Archipelago; stood towards it till eleven in the evening; and then stood on and off during the rest of the night. As I purposed anchoring, in case I met with a proper place, I passed through the channel between the great and the little islands that Bougainville left to the south. It is scarcely a league wide; but it appeared entirely free from danger. We were in mid-channel at noon, and at a mile's distance from the shore found the latitude by observation to be $14^{\circ} 7'$ south, the southern point of one of the islands bearing south 36° west. That point is consequently situated in $14^{\circ} 8'$ south latitude.

Though we did not perceive any canoes till we were in the channel, we had seen habitations on the windward side of the island, and a considerable group of Indians sitting in a circle under cocoa-nut trees, and appearing quietly to enjoy the sight afforded them by our frigates. They did not then launch a single canoe; or did they follow us along shore. This island, of about two hundred toises elevation, is very steep, and covered to the top with large trees, among which we distinguished a great number of the cocoa-nut kind. The houses are built about half way down the declivity, a situation in which the islanders breathe a cooler air than along shore. Near them we remarked several spots of cultivated ground, planted probably with sweet potatoes

potatoes or yams ; but, upon the whole, the island appeared far from fertile, and in any other part of the South sea I should have thought it uninhabited. My mistake would have been the greater, as even two little islands, that form the western side of the channel through which we passed, have their inhabitants. We saw five canoes set out from them, and join eleven others that came from the eastern island. After having paddled several times round the two ships with an air of distrust, they at last ventured to approach, and make some exchanges with us, but of so trifling a kind, that we only obtained about twenty cocoa-nuts, and two blue gallinules. These islanders, like all those of the South sea, were dishonest in their dealings ; and after receiving the price of their cocoa-nuts beforehand, seldom failed to paddle away without fulfilling their part of the agreement. The amount of their thefts was, it is true, of little importance, a few bead necklaces with some scraps of red cloth, being hardly worth asking for again. We sounded several times in the channel with a line of a hundred fathoms, but got no ground, though at less than a mile's distance from the shore. We continued our course in order to double a point, behind which we hoped to meet with shelter ; but found, that the island was not of the breadth indicated by M. de Bougainville's plan. It terminates, on the contrary, in a point, its greatest diameter being at most a league.

league. We found that the east wind raised a surf upon the coast, which is surrounded with reefs; and saw plainly, that it would be vain to seek an anchorage there. We then stood out of the channel, with the intention of running along the two islands to the west, which are both together nearly equal in extent to the more eastern one. A canal less than a hundred toises wide separates them, and at their western extremity is a small island, which I should have called a large rock, had it not been covered with trees. Before we doubled the two southern points, it fell dead calm, and we were tossed about by a heavy swell, which made me fearful of running foul of the *Astrolabe*. Luckily some little puffs of air soon extricated us from that disagreeable situation, which had not permitted us to attend to the harangue of an old Indian, who held a branch of *kava* in his hand, and delivered a discourse of considerable length. We knew, by reading a variety of voyages, that it was a sign of peace; and, while throwing him a few pieces of cloth, answered him by the word *tayo*, which, in the language of several nations inhabiting the islands of the South sea, means *friend*; but we had not as yet had sufficient practice to understand and pronounce distinctly the words of the vocabularies that we had extracted from Cook's voyages.

At length, when the breeze reached us, we made sail, in order to stand away from the coast, and get
out

out of the region of calms. All the canoes then came up alongside. In general they sail pretty well, but row very indifferently; and, as they overfet at every moment, would be useless to any body but such excellent swimmers as these islanders are. *They* are no more surpris'd or uneasy at such an accident, than we are at the fall of a hat. Taking up the canoe on their shoulders, they empty the water out of it, and then get in again, with the certainty of having the same operation to perform half an hour after, it being almost as difficult to preserve an equilibrium in such ticklish vessels as upon the tight rope. These islanders are in general tall, their mean height appearing to me to be five feet seven or eight inches. The colour of their skin nearly resembles that of the Algerines, or other nations of the coast of Barbary: their hair is long, and tied up on the top of their heads: their cast of countenance far from agreeable. I saw no more than two women; and even *their* features did not appear to be more delicately formed. The younger, who might be about eighteen years of age, had a dreadful and disgusting ulcer upon her leg. Several of the men also had large sores about their persons, possibly a beginning of leprosy; for I remarked two among them whose legs, covered with ulcers, and swelled to the size of their bodies, did not admit of a doubt as to the nature of their disease. They approached us with fear and without arms, every thing bespeaking them

them as peaceable as the inhabitants of the Society and Friendly islands. At one time we thought they had entirely taken leave of us, and their apparent poverty easily reconciled us to their absence; but the wind having fallen in the afternoon, the same canoes, accompanied by several others, came two leagues into the offing, to traffick with us anew. After quitting us they had gone ashore, and now returned rather more richly laden than before. We obtained from them at different times several curious articles of dress, five fowls, ten gallinules, a small hog, and the most beautiful turtle-dove we had ever seen. Its body was white, its head of the finest purple, its wings green, and its breast checkered with red and black spots, like the leaves of the anemomy. This charming bird was tame, and ate out of the hand and mouth; but it was not probable that we could convey it to Europe alive. And so it proved, its death only permitting us to preserve its feathers, which soon lost all their splendour. As the *Astrolabe* was constantly ahead in this day's run, all the canoes began their traffick with M. de Langle, who purchased two dogs, which we found excellent eating.

Although the canoes of these islanders are well constructed, and furnish a good proof of the skill with which they work in wood, we could never prevail on them to accept our hatchets, or any other instrument of iron. They preferred a few glass beads,

beads, that could be of no use to them, to all the hardware, and stuffs, we offered them; and gave us in return, among other things, a wooden vessel filled with cocoa-nut oil, exactly of the shape of our earthen pots, and such as no European workman would undertake to fashion by any other mean than a turning lathe. Their ropes are round, and twisted like our watch chains: their mats are very fine; but their stuffs are inferior to those of the Easter and Sandwich islands. It seems also, that they are very scarce; for all the islanders were absolutely naked, and only sold us two pieces. As we were sure of meeting with a much more considerable island farther west, where we flattered ourselves we should at least find shelter, if not a port, we deferred making more extensive observations till after our arrival at that island, which, according to M. Bougainville's plan, is only separated from the last island we had upon our beam at night-fall, by a channel eight leagues wide. I ran only three or four leagues to the westward after sunset, and passed the rest of the night in standing off and on under easy sail. At break of day I was very much surprised not to see the land to leeward, nor did I get sight of it till six o'clock in the morning, because the channel is infinitely wider than that laid down in the plan that served me as a guide. It is a great pity, that the charts of a voyage, which yields to none but that of captain Cook in accuracy of observation, and in extent

extent and importance of discoveries, should not have been drawn up with greater care, and upon a larger scale.

We did not find ourselves opposite the north-east point of the island of Maouna till five o'clock in the evening. Intending to seek an anchorage there, I made a signal to the *Astrolabe* to haul her wind, that we might stretch backward and forward to windward of the island during the night, and have the whole of the next day before us to explore it in every part. Though we were three leagues from the land, two or three canoes came along-side the same evening, bringing with them hogs and fruit, which they exchanged for beads. Hence we conceived a high opinion of the riches of the island.

The next morning, I approached the land, and stretched along it, at the distance of half a league. It is surrounded by a reef of coral, on which the sea broke with great fury; but that reef was almost close in shore, and in the creeks formed by several small projections of the coast there was room for canoes, and probably for our barges and long-boats to enter. We discovered a number of villages at the bottom of each creek, whence came innumerable canoes, laden with hogs, cocoa-nuts, and other fruit, which we purchased with glass ware. Such great abundance increased my desire to anchor, especially as we saw water falling in cascades from the tops of the mountains to the bottoms of the

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villages. So many advantages made me little scrupulous as to an anchorage. We hauled closer in shore, and having found at four o'clock, at a mile from land, and in thirty fathom water, a bank composed of rotten shells and a very little coral, we let go our anchors; but we were tost about by a very heavy swell that set in shore, although the wind blew from the land. We immediately hoisted out our boats; and the same day, M. de Langle and several officers, with three boats manned and armed by the two frigates, landed at a village, where they were received by the inhabitants in the most friendly manner. As night was coming on when they went ashore, the Indians made a great fire, to light the place of debarkation; and brought down birds, hogs, and fruit. After an hour's stay, our boats returned on board. Every one seemed satisfied with this reception, our only concern being to see our frigates anchored in so bad a roadstead, where they rolled as if in the open sea. Though we were sheltered from the easterly winds, the calm thence resulting sufficed to expose us to the greatest danger, in case our cables should part, while the impossibility of getting out left us no resource against a strong breeze from the north-west. We knew by the relations of preceding navigators, that the trade winds are very uncertain in these seas; and that it is almost as easy to sail east as west, a circumstance which favours the natives in their long excursions to leeward.

leeward. We had ourselves experienced this inconstancy of the wind, the western breeze having only left us in the latitude of 12° . These reflections made me pass a very bad night, especially as a storm was gathering to the northward, whence the wind was blowing fresh, but fortunately, however, the land breeze prevailed.

CHAPTER XXIV.

Manners, customs, arts, and usages of the islanders of Maouna.—Contrast of that beautiful and fertile country, with the ferocity of its inhabitants.—The swell becomes very heavy, and we are obliged to get under way.—M. de Langle wishing to water his ship, goes on shore with four boats manned and armed.—He and eleven persons of the two crews are murdered.—Circumstantial account of that event.

(DECEMBER 1787.)

THE next morning, as the rising of the sun announced a fair day, I resolved to avail myself of it, in order to reconnoitre the country, observe the inhabitants at their own homes, fill water, and then get under way, prudence forbidding me to pass a second night at that anchorage, which M. de Langle had also found too dangerous for a longer stay. It was therefore agreed upon, that we should sail in the afternoon, and that the morning, which was very fine, should be in part employed in trading for hogs and fruit. As early as the dawn of day, the islanders had surrounded the two frigates with two hundred canoes full of different kinds of provision, which they would only exchange for beads—in their estimation diamonds of the first water. Our axes,
our

our cloth, and all our other articles of commerce, they disdained. While a part of the crew was occupied in keeping them in order, and in trading with them, the rest filled the boats with empty casks, in order to go ashore to water. Our two boats, armed, and commanded by Messrs. de Clonard and Colinet, and those of the *Astrolabe* commanded by Messrs. de Monti and Bellegarde, set off with that intention at five o'clock in the morning, for a bay about a league distant, and a little way to windward; a convenient situation, as it enabled them, when loaded with water, to come back with the wind large. I followed close after Messrs. Clonard and Monti in my pinnace (*biscayenne*), and landed at the same time as they did. Unfortunately M. de Langle resolved to make an excursion in his jolly-boat to another creek, about a league distant from our watering place. This excursion, whence he returned delighted with the beauty of the village he had visited, was, as will be seen hereafter, the cause of our misfortune. The creek, towards which the long-boats steered, was large and commodious; both they and the other boats remained afloat at low water, within half a pistol shot of the beach; and the water was both fine, and easily procured. Messrs. de Clonard and de Monti preserved the best order possible. A line of soldiers was posted between the beach and the Indians, who amounted to about two hundred, including a great many women and children. We

prevailed upon them all to sit down under cocoa trees, that were not more than eight toises distant from our boats. Each of them had by him fowls, hogs, parrots, pigeons, or fruit, and all wished to sell them at once, which occasioned some confusion.

The women, some of whom were very pretty, offered their favours, as well as their fowls and fruit, to all those who had beads to give them; and soon tried to pass through the line of soldiers, who opposed but a feeble resistance to their attempts. Europeans who have made a voyage round the world, especially Frenchmen, have no arms to ward off similar attacks. Accordingly the fair savages found little difficulty in breaking the ranks; the men then approached; and the confusion was growing general; when Indians, whom we took for chiefs, made their appearance with sticks in their hands, and restored order, every one returning to his post, and our traffick beginning anew, to the great satisfaction of both buyers and sellers. In the mean time a scene had passed in our long-boat, which was a real act of hostility, and which I was desirous of repressing without effusion of blood. An Indian had gotten upon the stern of the boat, had laid hold of a mallet, and had aimed several blows at the arms and back of one of our sailors. I ordered four of the strongest seamen to lay hold of him, and to throw him into the sea, which was immediately done.

The

The other islanders appearing to disapprove of the conduct of their countryman, this squabble was attended with no bad consequences. Perhaps an example of severity would have been necessary to awe these people still more, by letting them know how much the force of our fire-arms was beyond their individual strength; for their height of about five feet ten inches, and their muscular limbs of colossal proportions, gave them an idea of their own superiority, which rendered us by no means formidable in their eyes; but having very little time to remain among them, I thought it right not to inflict a severer penalty upon him who had offended us; and, by way of giving them some idea of our power, contented myself with buying three pigeons, which were thrown up into the air, and shot in the presence of the whole assembly.

While all this was passing with the greatest tranquillity, and our casks were filling with water, I thought I might venture to the distance of two hundred yards to visit a charming village, situated in the midst of a wood, or rather of an orchard, all the trees of which were loaded with fruit. The houses were placed upon the circumference of a circle, of about a hundred and fifty toises in diameter, the interior forming a vast open space, covered with the most beautiful verdure, and shaded by trees, which kept the air delightfully cool. Women, children, and old men, accompanied me, and invited me into their houses. They spread the

finest and freshest mats upon a floor formed of little chosen pebbles, and raised about two feet above the ground, in order to guard against the humidity. I went into the handsomest of these huts, which probably belonged to a chief; and great was my surprise, to see a large cabinet of lattice-work, as well executed as any of those in the environs of Paris. The best architect could not have given a more elegant curve to the extremities of the ellipsis that terminated the building; while a row of pillars at five feet distance from each other formed a complete colonnade round the whole. The pillars were made of trunks of trees very neatly wrought, and between them were fine mats laid over one another with great art, like the scales of a fish, and drawing up and down with cords, like our Venetian blinds. The rest of the house was covered with leaves of the cocoa-palm.

This charming country combines the advantages of a soil fruitful without culture, and of a climate which renders clothing unnecessary. The trees that produce the bread-fruit, the cocoa-nut, the banana, the guava, and the orange, hold out to these fortunate people an abundance of wholesome food; while the fowls, hogs, and dogs, which live upon the surplus of these fruits, afford them an agreeable variety of viands. They were so rich, and had so few wants, that they disdained our instruments of iron and our cloth, and asked only for beads.

beads. Abounding in real blessings, they were desirous of obtaining superfluities alone.

They had sold at our market more than two hundred wood-pigeons, which would only eat out of the hand; and a number of the most beautiful turtle-doves and perroquets, equally tame. What cold imagination could separate the idea of happiness from so enchanting a place? These islanders, said we a hundred times over, are, without doubt, the happiest beings on earth. Surrounded by their wives and children, they pass their peaceful days in innocence and repose: no care disturbs them but that of bringing up their birds, and, like the first man, of gathering, without labour, the fruit that grows over their heads. We were deceived. This delightful country was not the abode of innocence. We perceived, indeed, no arms; but the bodies of the Indians, covered over with scars, proved that they were often at war, or else quarrelling among themselves; while their features announced a ferocity, that was not perceptible in the countenances of the women. Nature had, no doubt, stamped this character on their faces, by way of shewing, that the half-savage, living in a state of anarchy, is a more mischievous being than the most ferocious of the brute creation.

This first visit passed without any dispute capable of leading to disagreeable consequences. I learned, however, that there had been quarrels between individuals,

duals, but that they had been very prudently appeased. Stones had been thrown at M. Rollin, our surgeon-major; and an Indian, while pretending to admire M. de Monernon's sabre, had attempted to snatch it from him; but finding the scabbard alone left in his hand, he had run off in a great fright at the sight of the naked weapon. I perceived, that in general these islanders were very turbulent, and in bad subjection to their chiefs; but as I intended to leave them in the afternoon, I congratulated myself on not having attached any importance to the little instances of molestation we had met with. Towards noon I returned to the ship in my barge, and was very closely followed by the long-boats. I found it difficult to get alongside, both frigates being surrounded by canoes, and our market being as much crowded as ever. When I went ashore I had given the command of the Bouffole to M. Boutin, and had left him at liberty to establish such police as he might think proper, either by permitting a few of the islanders to come on board, or by positively opposing their entry, according to the turn circumstances might take. Upon the quarter-deck I found seven or eight Indians, the oldest of whom was presented to me as a chief. M. Boutin told me, that he could not have prevented their coming on board unless by firing upon them; that when they compared their bodily strength to ours they laughed at our threats, and made

made a jest of our sentinels; and that my well-known principles of moderation had made him unwilling to recur to violent measures, which, however, were the only ones capable of keeping them in awe. He added, that, since the chief was present, those who had come on board before were grown more quiet and less insolent.

I made the chief a number of presents, and shewed him every mark of kindness; but wishing at the same time to inspire him with a high opinion of our power, I ordered several experiments on the use of our weapons to be made in his presence. But their effect impressed him so little, that he seemed to think them only fit for the destruction of birds.

Our boats now arrived loaded with water, and I made every preparation to get under way, and profit by a light land-breeze which gave us hopes of having time to make a little offing. M. de Langle returned at the same moment from his excursion, and related, that he had landed in a noble harbour for boats, situated at the foot of a delightful village, and near a cascade of the most pellucid water. On going on board his own ship, he had given orders to get under way, of which he felt the necessity as well as myself; but he insisted in the most urgent manner upon our remaining, standing off and on, at a league from the coast, and upon our getting on board a few long-boat loads

loads of water, before we should entirely abandon the island. In vain did I represent to him that we were not in the smallest want of it.—He had adopted captain Cook's system, and thought water recently shipped a thousand times preferable to that which we had in the hold; and as a few individuals of his crew had slight symptoms of scurvy, he thought, with reason, that we owed them every relief in our power. Besides, no island could be compared with this for abundance of provision: the two frigates had already taken on board more than five hundred hogs, a great number of fowls and pigeons, and a great quantity of fruit; and yet all these valuable acquisitions had only cost us a few glass beads.

I felt the truth of these reflections; but a secret presentiment prevented my immediate acquiescence. I told him, that I thought the islanders too turbulent for us to trust our boats on shore, when they could not be supported by the fire of the ships; and observed to him that our moderation had only served to embolden men, who calculated upon nothing but our personal strength, which was certainly very much inferior to theirs. Nothing, however, could shake M. de Langle's resolution. He told me, that my resistance would make me responsible for the progress of the scurvy, which already began to show itself in an alarming manner, and that, besides, the harbour he was speaking of was infinitely more commodious than

than that of our watering place. Finally, he begged me to permit him to put himself at the head of the first party, assuring me, that in three hours he would return on board, with all the boats full of water. M. de Langle was a man of so sound a judgment, and so much capacity, that these considerations, more than any other motive, determined me to give my consent, or rather made my will give way to his. I promised him then, that we would stand off and on all night, and that in the morning we would dispatch our two long boats, and two barges, armed in any way he should think proper, and that the whole should be under his command. The event fully justified our opinion, that it was time to get under way. On heaving up the anchor we found one strand of the cable cut by the coral; and in two hours more the whole cable would have been cut through. As we were not under sail till four in the afternoon, which was too late an hour to think of sending our boats on shore, we postponed their departure till next day. The night was stormy, and the wind, which shifted every moment, made me come to a resolution of standing off about three leagues from the coast. At break of day a flat calm did not permit me to approach it; and it was not till nine o'clock, that a small breeze sprang up from the north-west, and enabled me to near the island, from which at eleven o'clock we were scarcely a league distant. I then dispatched my long-boat and barge,
commanded

commanded by Messieurs Boutin and Mouton, on board the *Astrolabe*, to take M. de Langle's orders. All those who had any slight symptoms of the scurvy were put into them, as well as six soldiers armed, with the master at arms at their head. The two boats contained in all twenty-eight men, and carried twenty empty casks, which were meant to be filled at the watering place. Messieurs de Lamanon and Colinet, though sick, were of the number of those that set off from the *Bouffole*. M. de Langle, on the other hand, set off in his barge, accompanied by M. Vaujuas, a convalescent. M. le Gobien, a midshipman, commanded the long-boat, and Messrs. de la Martiniere, Lavaux, and father Receveur, made part of the thirty-three persons sent by the *Astrolabe*. Among the sixty-one individuals, of which the whole party consisted, were the choicest men of both crews. M. de Langle armed all his people with muskets and cutlasses; and ordered six swivels to be mounted upon the long-boats. I had left him perfectly at liberty to provide every thing he might think conducive to his safety. The certitude we were in of having had no dispute with the natives, of which they could retain any resentment; the immense number of canoes that crowded round us in the offing; the air of gaiety and confidence that prevailed in our markets; every thing, in short, tended to increase his security, and I confess that mine could not well be greater than it was. But it was
contrary

contrary to my principles to send boats on shore, without the greatest necessity, especially in the midst of an immense number of people, when they could not be supported or even perceived by the ships.

The boats put off from the *Astrolabe* at half past twelve, and in three quarters of an hour arrived at the watering place. What was the surprise of all the officers, and of M. de Langle himself, to find, instead of a vast and commodious bay, a creek full of coral, through which there was no passage but a winding channel less than twenty-five feet wide, and on which the swell broke as upon a bar! When within, they had only three feet water; the long-boats grounded, and the barges only continued afloat because they were hauled to the entrance of the channel at a considerable distance from the beach. Unfortunately M. de Langle had examined the bay at high-water only, never imagining that the tide at these islands rose five or six feet. He could not believe his eyes. The first movement of his mind was to quit the creek, and repair to that where we had already filled water, which combined every advantage. But the air of tranquillity and good humour of the crowds waiting for him upon the beach with an immense quantity of fruit and hogs; and the women and children he saw among the Indians, who take care to send them out of the way when they have hostile intentions; all these circumstances concurred to banish his first prudent
6 idea,

idea, which an inconceivable fatality forbade him to pursue. He put the casks on shore from the four boats with the greatest tranquillity; while his soldiers preserved the best order possible upon the beach, being drawn up in two lines with a space left open for the working party. But this calm was not of long duration. Several of the canoes, which had parted with their provision to the ships, had returned to the island, and had all landed in the bay of the watering place, so that in a short time it was entirely full. Instead of two hundred natives, including women and children, whom M. de Langle had found there on his arrival at half past one, there were at three o'clock from a thousand to twelve hundred. The number of canoes, which had traded with us in the morning, was so considerable, that we scarcely perceived its diminution in the afternoon; and I gave myself credit for keeping them employed on board, in hopes that our boats would be so much the quieter on shore. Great was my mistake! M. de Langle's situation became every moment more and more embarrassing. He found means however, with the assistance of Messieurs de Vaujuas, Boutin, Colinet, and Gobien, to ship his water; but the bay was almost dry, and he could not hope to get the long-boats off before four in the afternoon. He stepped into them however, as well as his detachment, and took post in the bow with his musket and musketeers, forbidding any one

one to fire before he should give the word. He began however to be sensible that he should soon be forced to do so. Already the stones began to fly, and the Indians, who were only up to their knees in water, surrounded the long-boats at less than six feet distance, the soldiers, who were embarked, making vain efforts to keep them off. If the fear of commencing hostilities, and of being accused of barbarity, had not withheld M. de Langle, he would doubtless have given orders to fire a volley of musketry and swivels, which would not have failed to put the multitude to flight; but he flattered himself that he should be able to keep them in check without effusion of blood; and fell the victim of his humanity. In a very short time a shower of stones, thrown from a small distance with as much force as from a sling, struck almost every one of those who were in the long-boat. M. de Langle had only time to fire his two shot, when he was knocked down, and unfortunately fell over the larboard side of the boat, where more than two hundred Indians immediately massacred him with clubs and stones. When he was dead they tied him by the arm to one of the row-locks of the long-boat, in order, no doubt, to make surer of spoil. The long-boat of the Bouffole, commanded by M. Boutin, was aground at two toises from that of the Astrolabe, leaving in a parallel line between them a little channel unoccupied by the Indians. It was by that channel that all the

wounded, who had the good fortune not to fall on the other side, saved themselves by swimming. They got on board the barges, which, having most fortunately been kept afloat, were the means of saving forty-nine persons out of the sixty-one of which the party consisted. M. Boutin had imitated all the movements, and followed every step of M. de Langle: his water-casks, his detachment, all his people, had been embarked at the same time, and placed in the same manner, and he occupied the same post in the bow of the boat. Although afraid of the bad consequences of M. de Langle's moderation, he did not take upon him to order his detachment to fire till after M. de Langle had begun. It may be supposed that, at the distance of four or five yards, every shot must have killed an Indian, but there was no time to reload. M. Boutin was likewise knocked down by a stone, and by good fortune fell between the two long-boats, on board of which not a single man remained in less than five minutes. Those who saved themselves by swimming to the two barges, had received several wounds each, almost all on the head: those, on the contrary, who were unfortunate enough to fall over on the side of the Indians were instantly dispatched by their clubs. But the rage for plunder was such, that the islanders hastened to get possession of the long-boats, and jumped on board to the number of three or four hundred, tearing up the seats, and breaking the inside to pieces, in order to seek

seek for our supposed riches. While this was going on they no longer paid much attention to the barges; which gave time to Messieurs de Vaujuas and Mouton to save the rest of our people, and to ascertain that nobody remained in the hands of the Indians, but those who had been massacred and killed in the water by the blows of their *pátows*.

The crews of the barges, who till then had fired upon the islanders, and killed a good many, now began to throw their water-casks overboard, in order that every body might find room. They had, besides, almost exhausted their ammunition; and their retreat was become a matter of some difficulty, with such a number of persons dangerously wounded, who lay stretched out upon the thwarts, and hindered the working of the oars. To the prudence of M. Vaujuas, to the good order which he established, and to the strict discipline kept up by M. Mouton, who commanded the Bouffole's barge, we were indebted for the preservation of the forty-nine persons of both crews who escaped. M. Boutin, who had five wounds on the head, and one in the breast, was kept above water by the cockswain of the long-boat, who was himself wounded. M. Colinet was found lying in a state of insensibility upon the grapnel-rope of the barge, having an arm fractured, a finger broken, and two wounds on the head. M. Lavaux, surgeon major of the Astrolabe, was so

grievously wounded, that he was obliged to suffer the operation of the trepan. He had, however, swum to the barges, as well as M. de la Martinière, and father Receveur, who had received a violent contusion on the eye. M. de Lamanon and M. de Langle were massacred with unexampled barbarity, with Talin, master at arms of the Bouffole, and nine other persons belonging to the two crews. The savage Indians, after having killed them, still continued to wreak their fury upon the inanimate bodies with their clubs. M. le Gobien, who commanded the Astrolabe's long-boat under the orders of M. de Langle, did not abandon his post, till he found himself entirely alone. After having exhausted his ammunition, he leaped into the water, on the side of the little channel left between the two boats, which, as I have said above, was unoccupied by the Indians; and notwithstanding his wounds, found means to save himself on board one of the barges. That of the Astrolabe was so deeply laden, that it grounded. This event inspired the natives with the idea of disturbing the wounded in their retreat. They came down accordingly in great numbers towards the reefs at the entrance, within ten feet of which the barges were necessarily obliged to pass. The little ammunition that remained was exhausted upon the infuriated crowd; and at length the boats extricated themselves from a place, more dreadful

dreadful on account of its deceitful situation and the cruelty of its inhabitants, than the dens of wild beasts.

At five o'clock they came on board, and informed us of this disastrous event. We had round us at that moment not less than a hundred canoes, in which the natives were selling their provisions with a security which sufficiently proved their innocence. But they were the brothers, the children, the countrymen, of the barbarous assassins; and I confess that it was necessary to call up all my reason to repress the anger that transported me, and to hinder the crew from putting them to death. The soldiers were already casting loose the guns, and laying hold of their muskets. I stopped these movements, which were, however, pardonable enough; and ordered a single gun loaded with powder to be fired, as a warning to the canoes to depart. A small boat that came from the coast, informed them, without doubt, of what had just passed; for in less than an hour not a canoe remained in sight. An Indian who was upon the quarter-deck when our barge came on board, was arrested by my orders, and put in irons. The next day, having approached the coast, I permitted him to jump overboard, the confidence with which he had remained on board being an unequivocal proof of his innocence.

My first project was to send another party on

shore to revenge the death of our unfortunate companions, and to recover the wrecks of our boats. With that intention I stood to the westward in search of an anchorage; but I found nothing but the same bottom of coral, with a swell that set in shore, and broke upon the reefs. The creek in which the massacre took place, was besides very deeply indented in the side of the island, and it did not appear possible to approach it within cannon-shot. M. Boutin, whose wound confined him to his bed, but who retained the full command of his mind, represented to me also, that the situation of the bay was such, that if our boats should unfortunately run aground (a thing very possible), not a single man would return alive; for the trees, which are close to the sea-side, while protecting the Indians against our musketry, would leave the men whom we might debark exposed to a shower of stones, so much the more difficult to avoid, as being thrown with uncommon force and address, they produced almost the same effect as our bullets, and had the advantage of succeeding one another with greater rapidity. M. de Vaujuas was of the same opinion. I would not, however, accede to it, till I had fully ascertained the impossibility of anchoring within gun-shot of the village. I passed two days in working to windward opposite the bay; and could perceive the wrecks of our long-boats aground upon the sand, and round them an immense

number of Indians. What will no doubt appear incredible is, that during this time five or six canoes came off from the shore with hogs, pigeons, and cocoa-nuts, to offer us in exchange. I was obliged every moment to curb my anger, lest I should give orders to send them to the bottom. The Indians, not knowing that we had any arms of longer range than our muskets, remained without the least apprehension at fifty toises distance from the ships, and offered us their provisions with great apparent security. Our gestures gave them no encouragement to approach, and in this way they passed a whole hour in the afternoon of the 12th of December. Their offers of barter were succeeded by raillery, and ere long I perceived several other canoes quit the beach in order to join them. As they had no suspicion of the range of our guns, and as every thing indicated that I should soon be forced to depart from my principles of moderation, I ordered a shot to be fired into the midst of them. My orders were executed with the utmost precision. The ball dashed the water into the canoes, and they instantly made the best of their way to the shore, being joined in their flight by those that had left the beach a little while before.

It was with difficulty that I could tear myself from this fatal spot, and leave the dead bodies of our murdered companions. In M. de Langle I lost an old friend, a man of sense, judgment, and in-

formation, and one of the best officers in the French navy. His humanity was the cause of his death. Had he allowed himself to fire upon the first Indians who came into the water in order to surround his boats, he would have saved his own life, and those of M. de Lamanon and ten other victims of Indian ferocity. There were besides twenty persons belonging to the two frigates grievously wounded; this event deprived us for the moment of thirty-two hands, and two long boats, the only ones we had capable of containing a sufficient number of armed men to attempt a descent. These considerations were the guide of my future conduct. The smallest check would have forced me to burn one of the two frigates to man the other. I had indeed the frame of a long-boat on board; but I could not put it together without going into port. If, to satisfy my revenge, I had only wished for the massacre of a few Indians, I had an opportunity of destroying, sinking, blowing to pieces, a hundred canoes, containing more than five hundred persons; but I was afraid of being mistaken in the choice of my victims; and the voice of conscience saved their lives. Those whom this narrative may remind of the catastrophe of captain Cooke should bear in mind, that his ships were anchored in the bay of Karakakooa; that their guns rendered them masters of the beach; and that they could give the law to the Indians by threatening to destroy the canoes

that remained at the water-side, as well as the villages that skirted the coast. We, on the contrary, were at sea, out of gun-shot, and obliged to keep off the coast, where a calm might have been attended with the greatest danger. A heavy swell drifted us constantly towards the reefs, outside of which we might, without doubt, have anchored with iron chains; but still we should have been out of gun-shot of the village, besides that the swell was sufficient to cut our cable at the hawse-holes, and thereby to expose us to the most imminent hazard. I exhausted every calculation of probability before I left this fatal island; being at length convinced that anchoring was impracticable, and that a descent unsupported by the frigates would be rashness in the extreme. Even success would have been useless, since it was certain that not a single man remained alive in the hands of the Indians, and that our boats, which we had the means of replacing, were broken to pieces and aground. I steered in consequence, on the 14th, for a third island, which was in sight, bearing W. by N. and which M. de Bougainville had only seen from the mast-head, being driven off by bad weather. This island is separated from that of Maouna by a channel only nine leagues wide. The Indians had given us the names of ten islands that composed their archipelago, and had rudely traced their situation upon a sheet of paper. Although no great dependence is
to

to be placed upon the plan they drew, yet to me it appears probable that the people of these different islands are in a kind of confederacy with one another, and that they keep up a frequent intercourse. The farther discoveries we have made leave no doubt of this archipelago being more considerable than the Society islands, while it is equally well-peopled, and abounds in provision no less than they. It is even probable, that very good harbours might be found there; but having no boat, and knowing the exasperated state of mind of my crew, I resolved not to anchor till I came to Botany Bay, in New Holland, where I purposed putting together the frame of the new long-boat that I had on board. It was my intention, nevertheless, for the sake of advancing the science of geography, to explore the different islands I might meet with, and to determine their latitude and longitude with precision. I hoped also to be able to traffic with the inhabitants by lying to at a small distance from the coast. I willingly abandon to others the care of writing the uninteresting history of such barbarous nations. A stay of twenty-four hours, and the relation of our misfortunes, suffice to show their atrocious manners, and their arts, as well as the productions of one of the finest countries of the universe.

Before I continue the account of our voyage among the islands of this archipelago, I think it proper

proper to give the narrative of M. de Vaujuas, who commanded during the retreat from the bay of Maouna. Although he only went ashore as a convalescent, and was not upon duty, the urgency of circumstances restored to him his strength, and he did not leave the bay, till he was well assured that not a single Frenchman remained alive in the hands of the natives.

Narrative of M. de Vaujuas.

“ Tuesday, December 11th, at eleven o'clock in the morning, M. de la Pérouse sent his long boat, and his barge, laden with water-casks, with a detachment of soldiers under arms, to join a party under the command of M. de Langle. M. Boutin had already received instructions concerning the means of preserving order, and of providing for our safety, when the boats should go ashore. At the same hour our captain also hoisted out his boats, and in like manner had water-casks and arms put into them. At half past twelve, the ships being three quarters of a league from land, with the larboard tacks on board, the four boats set off in order to fill water in a creek, that had been examined by M. de Langle. This watering place was to leeward of the one whither we had already been, and was thought preferable to it by M. de Langle, because it appeared less inhabited, and equally commodious; but the first had the advantage of an easier

easier entrance, and of a sufficient depth of water for the boats to be in no danger of getting aground.

“ M. de Langle proposed to me, although I was still in a weak state, to accompany him in his excursion, by way of taking an airing on shore. He took the command of the barge himself, and gave that of the long boat to M. le Gobien. M. Boutin commanded the Bouffole's long-boat, and M. Mouton the barge. M. Colinet, and Father Receveur, who were both sick, with Messieurs de Lamanon, la Martiniere, and Lavaux, accompanied us, as well as a number of other persons belonging to the two frigates, so that we made up a detachment of sixty-one persons, the crews of the two barges included.

“ While on our way we saw with concern, that many of the canoes that were alongside of the ship followed us, and were coming to the same creek. We saw also along the rocks, that separated it from the neighbouring bays, many of the natives repairing thither from the other villages. Upon our arrival at the reef, which forms the creek of the watering place, and only leaves a narrow and shallow passage for boats, we perceived that it was low water, and that the long-boats could not go in without getting aground: they touched accordingly at half a musket shot from the beach, which we could only approach by pushing them on with our oars.

oars. This bay had appeared to the captain in a more favourable point of view, because, at the time he examined it, the tide was not so low.

“ Upon our arrival, the savages, who lined the coast, to the number of seven or eight hundred, threw into the sea, as a token of peace, several branches of the tree from which the islanders of the South Sea draw their intoxicating beverage. When we landed, M. de Langle gave orders, that each boat should be guarded by a soldier under arms, and by a sailor, and that the crews of the long-boats, while filling the casks, should be under the protection of a double line of soldiers extending from the watering place to the boats. As fast as the casks were filled, they were put quietly on board, the natives suffering themselves to be kept in tolerable order by the armed soldiers. Among them was a considerable number of women, and very young girls, who offered their favours to us in the most indecent manner, and whose advances were not universally rejected. The children we saw there were few.

“ Towards the end of our labour, the number of natives increased, and became more and more troublesome. This circumstance induced M. de Langle to abandon his original intention of trafficking for a few provisions; and he gave orders to re-embark without delay: but in the mean time, and this, I think, was the first cause of our misfortune,

tune, he made a present of a few beads to a sort of chiefs, who had helped to keep off the inhabitants. We were, however, certain, that this police was a mere mockery, and that, if these pretended chiefs had really any authority, it extended to a very small number of individuals. The captain's presents, distributed to five or six persons, excited the discontent of all the rest. From that moment a general clamour arose, and we were no longer able to keep them quiet. They suffered us, however, to get into our boats; but a part of them stepped into the water in pursuit of us, while the others picked up stones upon the beach.

“ As the long-boats were aground at a little distance from the strand, we were obliged in our way to them to pass through the water up to our waists; and in so doing several of the soldiers wet their arms. It was in this critical situation that the horrible scene began which I am about to narrate. Scarcely were we in the long-boats, when M. de Langle gave orders to shove them off, and to weigh the grapnel; but this several of the most robust islanders opposed by laying hold of the rope. The captain, witness of their resistance, seeing the tumult increase, and perceiving the stones reach him, tried to intimidate the savages by firing a musket in the air; but, so far from being frightened, they made it the signal of a general attack. Immediately a shower of stones, hurled with equal force and celerity,

celerity, came pouring upon us ; the fight began on both sides, and soon became general. Those whose muskets were in a serviceable state brought several of the infuriated Indians to the ground ; but the others were by no means dismayed, and seemed to combat with redoubled vigour. A part of them came close up to the long-boats, while the rest, to the number of six or seven hundred, continued to stone us in the most dreadful and murderous manner.

“ Upon the first act of hostility I threw myself into the water, in order to swim to the *Astrolabe*'s barge, which was destitute of officers. The exigency of the case gave me strength sufficient for the small distance I had to go ; and, notwithstanding my weakness, and my being struck on the way by several stones, I got into the boat without assistance. I saw with despair that there was scarcely a musket that was not wet, and that nothing remained to be done but to get her afloat without the reef as soon as possible. In the mean time the combat continued ; the enormous stones hurled by the savages maimed one or other of our people at every moment ; and whenever a wounded man fell into the water on the side of the savages, he was immediately dispatched with clubs and paddles.

“ M. de Langle was the first victim of the ferocity of these barbarians, who had received nothing but favours at his hand. At the very beginning of
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the attack, he was beaten down from the bow of the long-boat, on which he was standing, and fell into the sea, with the master at arms, and the carpenter, who were by his side. The fury with which the islanders fell upon the captain saved the two latter, who found means to get on board the barge. Those who were in the long-boats soon shared the fate of our unfortunate commander, except a few who got away to the reef, and swam thence towards the barges. In less than four minutes the islanders made themselves masters of the two boats, and I beheld with grief and rage the massacre of our unfortunate companions, without being able to afford them the smallest assistance. The Astrolabe's barge was still within the reef, and I expected every moment to see it involved in the misfortune of the long-boats; but it was saved by the avidity of the islanders, the greater part of whom rushed into the latter, while the rest contented themselves with throwing stones. A few, however, came down, and waited for us in the channel, and upon the reefs. Although the swell was heavy, and the wind right on end, we found means, notwithstanding their stones, and the dangerous wounds by which many of us were disabled, to extricate ourselves from this fatal place, and to join the Bouffole's barge without, commanded by M. Mouton, who, by throwing his water-casks into the sea, had lightened her, and made room for all those who swam on board. I
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had taken into that of the *Astrolabe* Messieurs Bourtin and Colinet, as well as several other persons. Those who had escaped to the barges were all either more or less wounded. The boats were therefore defenceless, and it was impossible to think of returning to a bay whence our escape had been most fortunate, in order to make head against a thousand enraged barbarians. It would have been exposing ourselves, to no purpose, to certain death.

“ We steered our course then towards the two frigates, which at three o'clock, the moment of the massacre, had made a tack off shore. They did not so much as suspect that we were in the smallest danger, and the breeze being fresh, were a long way to windward; an unfortunate circumstance for us, especially for those whose wounds required speedy dressing. At four o'clock they tacked again, and stood in for the land. As soon as we were without the reefs, I set the sails, and hauled close to the wind, in order to get clear of the coast, throwing overboard every thing likely to impede the sailing of a boat so full of people. Fortunately, the islanders, busy in plundering the long-boats, did not think of pursuing us. Our whole means of defence consisted of four or five cutlasses, and a charge for two or three muskets; a poor resource against two or three hundred barbarians armed with stones and clubs, and masters of light canoes which would enable them to choose their distance. Several of these

canoes came out of the bay, shortly after we left it; but they made sail along shore, whence one of the number set off to give information to those that had remained alongside the frigates. The Indians on board had the insolence to make menacing signs as they passed by; but our situation obliged us to suspend our vengeance, and to reserve our feeble means for self-defence.

“ As soon as we were in the offing, we pulled up with the wind on end towards the frigates, hoisting a red handkerchief at the mast-head, and on our nearer approach, firing our three last musket shots. M. Mouton made also the signal for assistance with two handkerchiefs; but we were almost alongside before we were perceived. The *Astrolabe*, the nearest of the two frigates, then bore down upon us; and at half past four I put those who were the most severely wounded on board of her. M. Mouton having done the same, we repaired without delay to the *Bouffole*, where I informed the commodore of this disastrous event. After the precautions with which his prudence had inspired him, and the just confidence he had placed in that of M. de Langle, his surprise was extreme; and I can only compare his grief to that which I felt myself. Our present misfortune reminded us strongly of that of July 13th, 1786, and helped to throw a still stronger gloom over our voyage; though in this last circumstance we were still fortunate in saving the greater part of those

who had gone ashore. If the desire of plunder had not for a moment stopped or fixed the fury of the savages, not a man of us would have escaped.

“It is impossible to describe the consternation occasioned by this fatal event on board the two frigates. The death of M. de Langle, who enjoyed the confidence and esteem of his crew, was matter of the deepest regret to every one. The islanders who were alongside when I came on board, were on the point of being immolated to the vengeance of our sailors, whom we found it extremely difficult to restrain. The general affliction which reigned on board is the best panegyric that can be pronounced on the captain. As to myself, I lost in him rather a friend than a commander. The kindness with which he treated me will make me regret him to the last moment of my existence, and happy should I have been if I could have proved my attachment and my gratitude by sacrificing it in his defence. But this brave officer, being more exposed than any one else, was the first who fell a prey to the wild beasts that assailed us. In my weak and convalescent state, I had gone ashore without arms, under the protection of others; and when I reached the barge all the ammunition was either exhausted or wet. All then that I could do was to give orders, which were unfortunately of too little effect.

“I should do injustice to those who like me had

the good fortune to save their lives, if I did not declare that they conducted themselves with all possible bravery and *sang-froid*. Messieurs Boutin and Colinet, who, notwithstanding their bad wounds, were perfectly collected, had the goodness to assist me with their advice; and I was also ably seconded by M. le Gobien, who was the last to leave the long-boat, and whose example, intrepidity, and discourse, contributed not a little to reassure such of the sailors as felt themselves dismayed. The petty officers, soldiers, and seamen, executed the orders given them with equal punctuality and zeal; and M. Mouton had no less reason to be satisfied with the crew of the Bouffole's barge.

“ Every one who was on shore can attest with me that no violence or imprudence on our part provoked the attack of the savages. Our captain had given the strictest orders in that respect, and they were universally obeyed.

(Signed)

VAUJUS.”

*List of the Persons massacred by the Savages of the Island
of Maouna, December 11, 1787.*

THE ASTROLABE.

M. DE LANGLE, post captain, commander.

YVES HUMON, JOHN REDELLEG, FRANCIS FERRET, LAURENCE ROBIN, and a Chinese, seamen.

LOUIS DAVID, quarter-gunner.

JOHN GERAUD, domestic.

THE BOUSSOLE.

M. DE LAMANON, natural philosopher and naturalist,

PETER TALIN, gunner.

ANDREW ROTH and JOSEPH RAYES, quarter-gunners.

CHAPTER XXV.

Departure from the island of Maouna.—Description of the island of Oyolava.—Exchanges with its inhabitants.—We make the island of Pola.—New details concerning the manners, arts, and customs of these islands, and concerning the productions of their soil. — We fall in with Cocoa-nut and Traitor islands.

THE 14th of December I stood for the island of Oyolava, of which we had sight five days before we arrived at the anchorage, that proved so fatal to us. M. de Bougainville had observed the southern part of it, laid down in his plan of this archipelago, from a very great distance. This island is separated from that of Maouna, or *of the Massacre*, by a channel about nine leagues wide, and is at least equal to Otaheite in beauty, in extent, fertility, and population. When at the distance of three leagues from its north-east point, we were surrounded by innumerable canoes laden with bread-fruit, cocoa-nuts, bananas, sugar-canes, pigeons, and *gallinules*, with a very few hogs. The inhabitants of this island much resemble those of the island of Maouna, who had

had behaved to us with such horrible treachery. Their dress, their features, and their gigantic stature, were so little different, that our seamen thought they recollected several of the assassins, and it was with great difficulty that I prevented their firing upon them: but I was certain, that they were blinded by their resentment; and a revenge, which I did not think allowable upon the canoes of the very island of Maouna, at the moment I was informed of the dreadful event, could not be justly taken four days afterwards, in another island, and at fifteen leagues from the field of battle. I contrived, then, to appease the fermentation, and we continued our exchanges. It was conducted with more tranquillity and honesty than at the island of Maouna, because the smallest acts of injustice were punished with blows, or repressed by threatening words and gestures. At four o'clock in the afternoon we brought to abreast of perhaps the largest village that exists in any island of the South Sea, or rather opposite a very extensive inclined plain, covered with houses from the summit of the mountains to the water-side. These mountains are nearly in the middle of the island, whence the ground descends with a gentle declivity, and presents to ships an amphitheatre covered with trees, huts, and verdure. We saw the smoke rise from the interior of the village as from the midst of a great city; while the sea was covered with canoes, all of which endeavoured to approach our

vessels, several of them being paddled along by idle gazers, who, having nothing to sell, went round and round our frigates, and appeared to have no object in view, but to enjoy the spectacle we afforded them.

The presence of the women and children, who were among them, might have led us to presume, that they had no bad intention; but we had great reason to trust no longer to such appearances, and we were prepared to repel the least act of hostility, in a manner that would have rendered the navigators formidable to the natives. I am a good deal inclined to believe, that we are the first who have traded with these people. They were perfectly unacquainted with iron, constantly refusing that which we offered them, and preferring a single bead to an axe, or a nail six inches long. Rich in the substantial blessings of nature, they sought in their exchanges nothing but superfluities, and articles of luxury. Among a considerable number of women, I remarked two or three of agreeable countenance, who might be supposed to have served as a model for the design of the young woman bearing presents in Cook's third voyage. Their hair ornamented with flowers, and tied round with a green ribbon in the way of a *bandeau*, was plaited with grass and moss; their shape was elegant; their arms were well turned and admirably proportioned; and their eyes, their countenances,
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and their gestures, bespoke great sweetness of temper, while those of the men expressed nothing but surprise and ferocity.

In the dusk of the evening we filled our sails and stood on, abreast of the island, all the canoes returning to the shore. The beach, covered with breakers, offered no shelter to our ships, because a high sea from the north-east broke with fury against the north coast, along which we were navigating. If I had intended to anchor, I should probably have found good shelter on the west side. In general, within the tropics, it is only to leeward of the islands that navigators ought to seek an anchorage. The whole of the next day a flat calm prevailed, with frequent flashes of lightning followed by thunder and rain. Very few canoes came alongside, which led me to believe, that they had heard at Oyolava of the event that had taken place at Maouna. As it was possible, however, that they were kept in their ports by the rain and lightning, my conjecture may have been ill-founded; but it acquired a high degree of probability on the 17th, when we were abreast of the island of Pola. Though we approached much nearer to it than to the former, not a single canoe came off. Hence I presumed, that these people had not yet made sufficient progress in morality to know, that the penalty ought only to fall upon the culpable, and that the punishment of the real assassins could alone satisfy

satisfy our vengeance. The island of Pola, somewhat smaller than that of Oyolava, but equally beautiful, is only separated from it by a channel four leagues across, which is itself intersected by two islets of some little extent. One of them is low, well wooded, and probably not destitute of inhabitants. The north coast of Pola, like that of the other islands of this archipelago, affords no access to shipping; but on doubling its west point, the navigator will find a smooth sea without breakers, which promises excellent roadsteads.

We had learnt from the natives of Maouna, that the Navigators Islands are ten in number; namely: Opoun, the most easterly; Leoné, Fanfoué, Maouna, Oyolava, Calinassé, Pola, Shika, Ossamo, and Ouera.

We are unacquainted with the position of the last three. The Indians, in the plan they traced, laid them down south of Oyolava; but if so situated, it is certain, that the course steered by M. Bougainville must have brought him in sight of them. Notwithstanding all the patience and sagacity of M. Blondela, who took particular pains to get some geographical information out of the islanders, he was perfectly unable to form any conjecture concerning their bearings; but the sequel of our voyage taught us, that two of them may possibly be Cocoa and Traitor islands, laid down, according

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to captain Wallis's observations, $1^{\circ} 15'$ too far west.

Opoun, the most southerly, as well as the most easterly of these islands, is in $14^{\circ} 7'$ south latitude, and $171^{\circ} 27' 7''$ west longitude. Several geographers attribute this discovery to Roggewein. According to them he gave them the name of *Beauman's Islands* in 1721; but neither the historical details concerning these people, nor the geographical position assigned to the islands by the writer of Roggewein's voyage*, agree with that opinion. Let us hear what he says on the subject himself.

" We discovered three islands at the same time,
" in the 12th degree of latitude, of a very agreeable
" appearance. We found them well stocked with
" fine fruit trees, and all sorts of herbs, vegetables,
" and plants. The natives, who came out to meet
" our vessels, offered us a great variety of fish,
" with cocoa-nuts, bananas, and other fruit. These
" islands must be very well peopled, since at our
" arrival the beach was already crowded with several
" thousand men and women, the former armed with
" bows and arrows. All the inhabitants are white,

* The historical relation of Roggewein's voyage, brought to France by the president de Broffes, was written in the French language in 1739, by a German, a native of Mecklenburg, and serjeant of the troops embarked on board Roggewein's fleet.

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“ and do not differ from Europeans, except that
“ some of them have their skin much burned by the
“ excessive heat of the sun. They appeared a good
“ sort of people, lively and gay in conversation,
“ and kind and humane towards one another. No-
“ thing indeed savage is observable in their man-
“ ners. Neither were their bodies painted like
“ those whom we had before discovered. They
“ were clad from the waist to the ankle with fringes
“ of a filken stuff, skilfully wrought; and their
“ heads were covered with very large and fine hats,
“ to protect them from the heat of the sun. Some
“ of these islands were ten, fourteen, and even
“ twenty miles in circumference. We called them
“ Beauman's Islands, after the name of the captain
“ of the Tienhoven, by whom they were first dis-
“ covered. It must be confessed (adds the author)
“ that they are the most civilized and honest nation
“ we have met with in the islands of the South Sea.
“ There is good anchorage all along the coasts of
“ these islands, in water from thirteen to twenty
“ fathoms.”

It will be seen in the sequel of this chapter, that these details have scarcely the least relation to those which we have to give concerning the people of Navigators Islands. As the geographical position is equally unlike, and as a German chart exists in which the track of Roggewein is marked,

marked, and which lays down these islands in 15° , I am justified in believing, that Beauman's Islands are not the same as those, to which M. de Bougainville has given the name of *Navigators Islands*. It appears to me, however, necessary to let them retain that denomination, in order that a confusion may not be introduced into geography very hurtful to the progress of the science. These islands, situated about the 14° of south latitude, and between the 171st and 175th degrees of west longitude, form one of the finest archipelagoes of the South Sea; and are as interesting in point of arts, productions, and population, as the Society and Friendly Islands, of which the English navigators have given us a description highly satisfactory. As to the moral qualities of the natives, although our intercourse was but of a moment's duration, we had but too much reason to be acquainted with their disposition, and we have no hesitation in asserting, that it would be vain to endeavour to excite the sentiment of gratitude in their ferocious minds, which are only to be restrained by fear.

These islanders are the tallest and best made that we have yet met with. Their usual height is five feet nine, ten, and eleven inches; but their stature is less astonishing than the colossal proportions of the different parts of their bodies. Our curiosity, which often led us to measure them, gave them an opportunity of making frequent comparisons of their
bodily

bodily strength with ours. These comparisons were not to our advantage; and we perhaps owe our misfortunes to the idea of individual superiority resulting from repeated trials. Their countenances often appeared to express a sentiment of disdain, which I hoped to destroy, by ordering our arms to be used in their presence; but my end could only have been gained by directing them against human victims; for, otherwise, they took the noise for sport, and the trial for a diversion.

Among these Indians a very small number is below the height indicated above. I have, however, measured several who were only five feet four inches, but these are the dwarfs of the country; and although their stature resembles ours, their strong and nervous arms, their broad chests, and their legs and thighs, are of a very different proportion. It may be safely said, that they are in regard to Europeans, what Danish horses are in respect to those of the different provinces of France.

The men have the body painted or tatowed, so that any one would suppose them clad, although they go almost naked. They have only a girdle of sea weeds encircling their loins, which comes down to their knees, and gives them the appearance of the river gods of fabulous history, whom it is customary to depict with rushes round their waist. Their hair is very long. They often twist it round their heads, and thus add to their native ferocity of countenance,

countenance, which always expresses either surprise or anger. The least dispute between them is followed by blows of sticks, clubs, or paddles, and often, without doubt, costs the combatants their lives. They are almost all covered with scars, which can only be the consequence of their individual quarrels. The stature of the women is proportioned to that of the men. They are tall, slender, and not without grace; but they lose, while yet in their prime, those elegant forms, of which nature has not broken the mould among this barbarous race, but of which she appears to leave them in possession only for a moment, and with reluctance. Among a great number of women that I had an opportunity of seeing, I only observed three really pretty. The gross effrontery of the rest, the indecency of their motions, and the disgusting offers which they made of their favours, rendered them fit mothers and wives for the ferocious beings that surrounded us. As the history of our voyage may add a few pages to that of man, I shall not expunge some traits, that might seem indecent in any other work. I have to relate, then, that the very small number of young and pretty females, of whom I have already spoken, soon attracted the attention of several Frenchmen, who, in spite of my prohibition, endeavoured to form a connexion with them. The looks of the Europeans expressed desires which were soon divined; some old women undertook the negotiation;

negotiation; the altar was prepared in the handsomest hut in the village; and all the blinds were let down, and the inquisitive excluded. The victim was then laid in the arms of an old man, who exhorted her, during the ceremony, to moderate the expression of her pain; while the matrons sang, and howled; the ceremony being performed in their presence, and under the auspices of the old man, who served at once as priest and altar. All the women and children in the village were round the house, gently lifting up the blinds, and seeking to enjoy the sight through the smallest crevices in the mats. Whatever former navigators may have said, I am convinced, that in the Navigators Islands, at least, the young girls, before they are married, are mistresses of their persons, and that they are not dishonoured by their complaisance. It is even more than probable, that in marrying they are called to no account concerning their past conduct; but I have no doubt that they are obliged to be more reserved when provided with a husband.

These people cultivate certain arts with success. I have already spoken of the elegant form which they give to their huts. It is not without reason that they disdain our instruments of iron; for they finish their work very neatly with tools made of a very fine and compact species of basalt in the form of an adze. For a few glass beads they sold us large three-legged dishes, of a single piece of wood, and

so well polished, that they seemed to have been laid over with a coat of the finest varnish. It would take an European workman several days to produce one of these dishes, which, for want of proper instruments, must cost an Indian several months labour. They set, however, scarcely any value upon them, because they set little upon the time they employ. The fruit trees, and nutritious roots, that grow spontaneously around them, insure them their subsistence, as well as that of their hogs, dogs, and fowls; and if they sometimes stoop to work, it is to procure enjoyments rather agreeable than useful. They manufacture very fine mats, and some paper-stuffs. I remarked two or three of them whom I took for chiefs, with a piece of cloth tied round their waist like a petticoat, instead of a girdle of weeds. It is composed of real thread, prepared, no doubt, from some filamentous plant like the nettle or flax; and is manufactured without a shuttle, the threads being absolutely laid over one another like those of their mats. This cloth, which has all the suppleness and solidity of ours, is very fit for the sails of their canoes; and appeared to us far superior to the paper stuff of the Society and Friendly Islands, which they manufacture also. They sold us several pieces; but they hold it very cheap, and make very little use of it, the women preferring the fine mats which I have spoken of above.

We did not at first discover any identity between
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their language and that of the natives of the Society and Friendly Islands, of which we had vocabularies; but a more mature examination convinced us, that they speak a dialect of the same language. A fact which tends to prove it, and which confirms the opinion of the English concerning the origin of these people, is that a young domestic, a native of the province of Tagayan in the north of Manilla, understood and explained to us the greater part of their words. It is well known that the Tagayan, the Talgal, and the generality of languages spoken in the Phillippines, are derived from the Malay; a language more diffused than were those of the Greeks and Romans, and common to the numerous tribes, that inhabit the islands of the great Pacific Ocean. It appears to me evident, that all these different nations are the progeny of Malay colonies, which, in some age extremely remote, conquered the islands they inhabit. I should not even wonder, if the Chinese and Egyptians, whose antiquity is so much vaunted, were mere moderns in comparison of the Malays. But however this may be, I am satisfied that the aborigines of the Philippine Islands, Formosa, New Guinea, New Britain, the New Hebrides, the Friendly Islands, &c. in the southern hemisphere, and those of the Marianna and Sandwich islands in the northern, were that race of woolly-headed men still found in the interior of the islands of Luconia and Formosa.

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They were not to be subjugated in New Guinea, New Britain, and the New Hebrides; but being overcome in the more eastern islands, which were too small to afford them a retreat in the centre, they mixed with the conquering nation. Thence has resulted a race of very black men, whose colour is still several shades deeper than that of certain families of the country, probably, because the latter have made it a point of honour to keep their blood unmixed. I was struck with these two very distinct races in the Islands of Navigators, and cannot attribute to them any other origin.

The descendants of the Malays have acquired in those islands a degree of vigour and strength, a lofty stature, and a herculean form, which they do not inherit from their forefathers; but which they owe, without doubt, to an abundance of food, to a mild climate, and to the influence of different physical causes, which have been constantly acting during a long series of generations. The arts, which they, perhaps, brought with them, may have been lost for want of materials and instruments to practise them; but the identity of language, like Ariadne's clue, enables the observer to follow all the windings of this new labyrinth. The feudal government is also preserved here: that government which little tyrants may regret; which was the disgrace of Europe for several centuries; and of which the gothic remains are still to be found in our laws, and are

the medals that attest our ancient barbarism: that government, which is the most proper to keep up a ferocity of manners, because the smallest disputes occasion wars of village against village, and because wars of this nature are conducted without magnanimity, and without courage. Surprises and treachery are employed by turns, and in these unfortunate countries, instead of generous warriors, nothing is to be found but base assassins. The Malays are still the most perfidious nation of Asia, and their children have not degenerated, because the same causes have led to, and produced the same effects. It may be objected, perhaps, that it must have been very difficult for the Malays to have made their way from west to east, to arrive at these different islands; but the westerly winds blow as frequently as the easterly in the vicinity of the equator, along a zone of seven or eight degrees from north to south, where the wind is so variable, that it is hardly more difficult to navigate east than west. Besides, these different conquests may not have been effected at the same time: the people in question may, on the contrary, have spread themselves by little and little, and gradually have introduced that form of government which still exists in the peninsula of Malacca, at Java, Sumatra, and at Borneo, as well as in all the other countries subject to that barbarous nation.

Among fifteen or eighteen hundred Indians, whom we had an opportunity of observing, thirty, at least, had

had the appearance of chiefs. They kept up a kind of police, and belaboured the refractory with their sticks; but the order, which they had the air of wishing to establish, was transgressed a minute afterwards. Never were sovereigns worse obeyed; never were more frequent disorders occasioned by anarchy and a want of subordination.

It is not without reason, that M. de Bougainville has named them *the Navigators*. They do not go so much as from one village to another on foot; but perform all their journies in canoes. Their villages are all situated in creeks by the sea-side, and have no paths except to penetrate into the interior of the country. The islands we visited were covered to the very summit with fruit trees, on which wood-pigeons and turtle-doves, green, red, and of various other colours, were sitting. We also saw beautiful parroquets, a species of black-bird, and even partridges. It is by taming birds that the natives charm away the *tedium* that results from their idle mode of life. All their houses were full of wood pigeons, which they bartered with us by hundreds. They also sold us more than three hundred gallinules of the most beautiful plumage.

Their canoes have outriggers, are very small, and generally contain only five or six persons: some few, however, may contain as many as fourteen. They do not appear to deserve the praise that navigators have bestowed on their swiftness. I do not think

when under fail that it exceeds seven knots; and with their paddles they could not keep way with us when we were running only four miles an hour. These Indians are such excellent swimmers, that their canoes seem only to serve them to rest themselves in. As upon the least false movement they fill, they are obliged every moment to leap into the sea, take up their sinking vessels upon their shoulders, and pour out the water. They sometimes join two together by means of a cross-piece of wood, in which they make a step to receive the mast. In this way they are less likely to overset, and can preserve their provision during a long voyage. Their sails are of matting, or of matted cloth, are extended by a sprit, and do not deserve a particular description.

Their only modes of fishing are with the hook and line, and sweep-net. They sold us some of the nets, and baits of mother of pearl, and white shells very skilfully wrought. These instruments are in the shape of flying fish, and have a hook attached to them made of tortoise-shell, and strong enough to hold a tunny, boneta, or dorado. They exchanged their largest fish for a few glass beads, and it was easy to see by their eagerness, that they were in no fear of wanting food.

The islands of this archipelago, that I visited, appeared to me volcanic. All the stones of the beach, on which the sea breaks with such fury as to throw

up the water more than fifty feet high, are nothing but pieces of lava, or basaltic in the form of pebbles, and of coral, with which the whole island is surrounded. The coral leaves in the middle of almost all the creeks a passage, which, though narrow, is sufficient for canoes, and even for boats and long-boats; and thus forms little ports for the navy of the islanders, who never leave their canoes in the water; but on coming ashore lodge them near their houses, under the shade of trees. They are so light that two men can carry them upon their shoulders with ease.

The most lively imagination would find it difficult, to figure to itself situations more agreeable than those of their villages. All the houses are built under fruit trees, which keep them delightfully cool. They are seated upon the borders of streams, which run down from the mountains, and by the side of which are paths, that lead into the interior of the island. The principal object of their architecture is to protect them from the heat, and I have already said, that to this advantage they add that of elegance. These houses are sufficiently spacious, to lodge several families; and are surrounded with blinds, which are drawn up to windward, and shut upon the sunny side. The islanders sleep upon very fine and clean mats, perfectly out of the way of all humidity. We perceived no *morai*; neither can we say any thing of their religious rites.

These islands abound with hogs, dogs, fowls, birds, and fish. They are also covered with cocoa-nut, guava, and banana trees, as well as another tree bearing a large nut that is eaten roasted, and that in taste much resembles a chesnut. Sugar-canes grow spontaneously upon the banks of the rivers; but they are watery, and contain less saccharine matter than those of our West India islands; a difference which proceeds, no doubt, from their growing in the shade, without cultivation, and upon too rank a soil.

Notwithstanding the danger of making an excursion into the interior of the island, Messieurs de la Martinière and Collignon rather followed the impulses of their zeal, than the dictates of prudence; and, at the time of the landing that proved so fatal to us, advanced some distance inland in order to make Botanical discoveries. The Indians exacted a glass bead for every plant picked up by M. de la Martinière, and threatened to knock him down when he refused to make them the retribution required. Followed by a storm of stones at the moment of the massacre, he swam to the barges, with his bag of plants upon his back, and by these means brought them safe on board. Till then we had perceived no other arms but clubs, or *patow-patows*; but M. Boutin assured me, that he had seen several bundles of arrows in their hands, but nothing like a bow. I am inclined to think, that what he took for arrows were
only

only lances, which serve them to strike fish. Their effect in a battle would be far less murderous than that of stones of two or three pounds weight, which they throw with inconceivable vigour and address. These islands are exceedingly fertile, and I should suppose, that their population is very considerable. The eastern ones, Opoun, Leoné, and Fanfoué, are small, especially the last two, which are about five miles in circumference; but Maouna, Oyolava, and Pola, may be numbered among the largest and most beautiful of the South sea. The accounts of the different navigators present no picture to the imagination at all comparable to the beauty and immense extent of the village, to leeward of which we lay to on the north coast of Oyolava. Although it was almost night when we arrived there, we were instantly surrounded with canoes, that curiosity, or the desire of traffick, had brought out of their ports. Several of them had nothing on board, and only came to enjoy the novel sight we afforded them. There were some among them extremely small, containing only a single man, and covered with ornaments. As they paddled round the ships without making any exchanges, we called them whiskies (*cabriolets*), of which they possess the bad qualities; for the slightest contact of the other canoes overset them every moment. We had also a near view of the great and noble island of Pola; but we had no intercourse with its inhabitants. On doubling

bling the western part of this last-mentioned island we perceived smooth water, which promised good anchorage as long, at least, as the wind should blow from the eastward, but the fermentation among the crew was too great to permit me to think of coming to an anchor. After the event that had happened to us, I could not prudently send our seamen ashore, without arming each man with a musket, and each boat with a swivel; and then the consciousness of their strength, added to their desire of revenge, would perhaps have induced them to repress the smallest act of injustice on the part of the savages with musket shot. Besides, in these bad anchorages a ship runs a risk of being lost, when unprovided with a boat capable of carrying out an anchor, by which she may warp out.

It was in consequence of these considerations, that I determined, as I have already said, not to anchor till I should reach Botany Bay, confining myself to pursue such tracks in the different archipelagoes, as were likely to lead me to new discoveries.

When we had weathered the western coast of the island of Pola, we lost sight of all land. We had seen nothing of three islands which the savages had called Shika, Ossamon, and Ouera, and to which they had assigned a position south of Oyolava. I made every effort to stand to the south-south-east; but was at first prevented by a breeze from the east-south-east, so light that we only ran ten or twelve leagues

leagues a day. At last it shifted successively to the north, and north-east, which enabled me to make casting in my course, and on the 20th I got sight of a round island, precisely south of Oyolava, but nearly forty leagues off. M. de Bougainville, who passed between these islands, did not perceive the former, because he was a few leagues too far to the northward. Want of wind did not permit me to approach it that day; but on the following I ran within two leagues of the coast, and saw two other islands to the southward, which I plainly discovered to be Cocoa and Traitors islands of Schouten. Cocoa Island is very lofty, and in the shape of a sugar-loaf: it is covered with trees to the summit, is nearly a league in diameter, and is separated from Traitors Island by a channel about three miles wide. This channel is itself intersected by a small island, which we perceived at the north-west point of the one last mentioned. Traitors Island is low and flat, with only a hill of some height in the middle; and is divided into two parts by a channel, of which the mouth is about 150 toises wide. Schouten had no opportunity of seeing it, because for that purpose it is necessary to be in the opposite point of the compass; we ourselves should not have even suspected its existence, if we had not run close in with that quarter of the island. We had no longer any doubt that these three islands, of which two alone deserve the name, were in the number of the ten,
which,

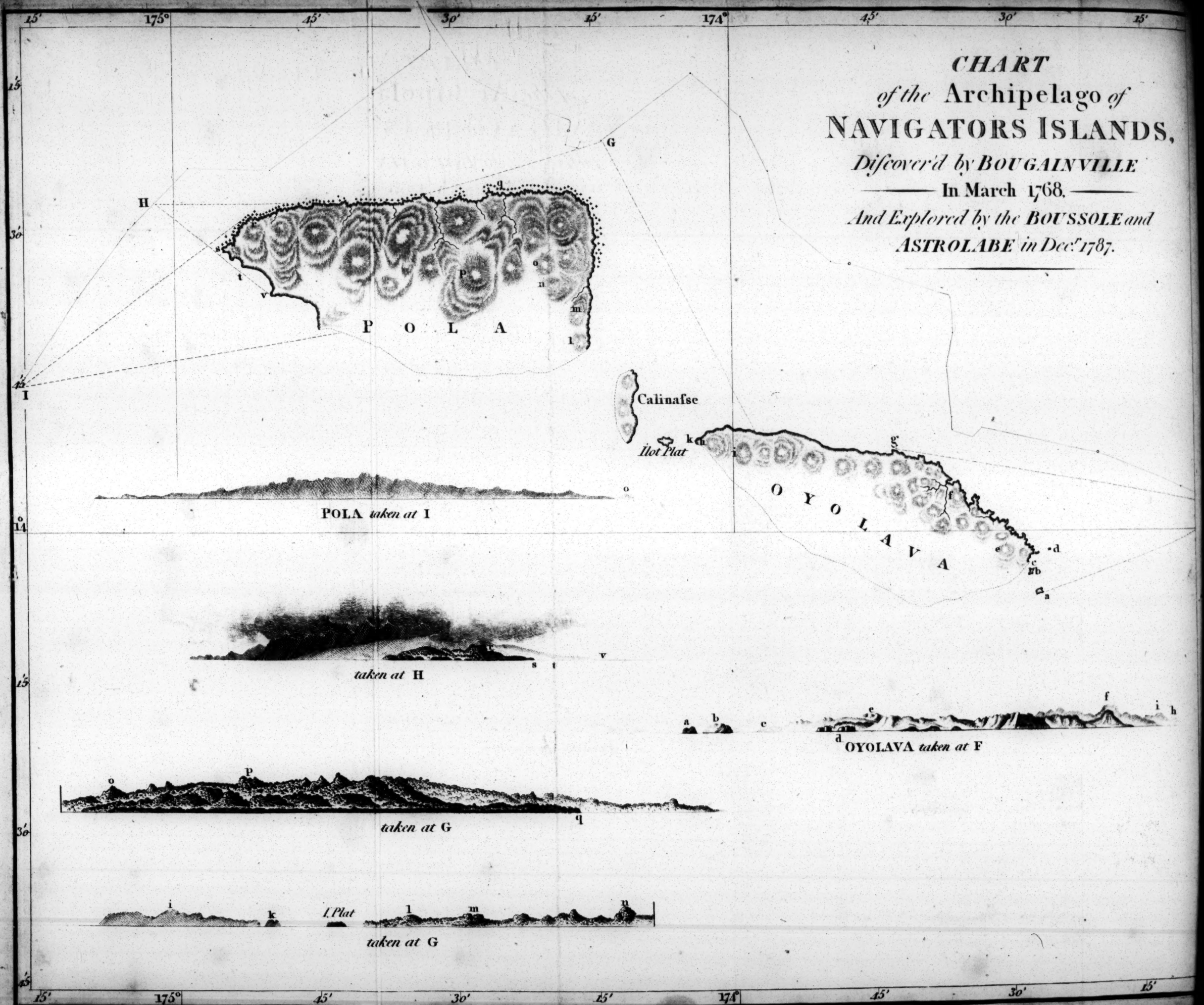
which, according to the accounts of the savages, compose the archipelago of the Navigators. As it blew very fresh from the north-west, as the weather had a very threatening appearance, and as it was late in the day, I was very little surpris'd at seeing no canoe come on board, and determin'd to pass the night in standing off and on, in order to reconnoitre the land the following day, and to trade with the Indians for a few refreshments. The weather was squally, and the wind only varied from north-west to north-north-west. I had perceived some breakers on the north-west point of the Little Island of Traitors, which made me work out a little into the offing. At day break I neared the last-mentioned island, which, being lower and more extensive than Cocoa Island, I thought likely to be better peopled. At eight o'clock in the morning I brought to to the west-south-west at two miles from a sandy bay which is in the western part of the Great Island of Traitors, and in which I did not doubt finding an anchorage sheltered from easterly winds. About twenty canoes immediately left the shore, and approached the ships in order to make exchanges: several had also come out of the channel that divides the Island of Traitors; and were loaded with the finest cocoa-nuts I had ever seen, with a small number of bananas, and with a few yams. One alone brought out a small hog and three or
four

four fowls. It was easy to perceive, that these Indians had already either seen or heard of Europeans. They approached without fear, traded with a good deal of honesty, and never refused, like the natives of the archipelago of Navigators, to give their fruit before they were paid for it; or, like them, did they give a preference to beads over nails and pieces of iron. They spoke, however, the same language, and had the same ferocious look; their dress, their manner of tatowing, and the form of their canoes, were the same; nor could we doubt that they were one and the same people: they differed, indeed, in having universally two joints cut off from the little finger of the left hand, whereas in the islands of Navigators I only perceived two individuals, who had suffered that operation. They were also of much lower stature, and far less gigantic make; a difference proceeding, no doubt, from the soil of these islands, which being less fertile, is consequently less favourable to the expansion of the human frame. Every island that we saw recalled to our minds some trait or other of Indian perfidy: Roggewein's crew had been attacked and stoned at the Recreation Islands to the eastward of the Islands of Navigators; Schouten's at Traitors Island, which was in sight, and lay south of that of Maouna, where we had ourselves been treated in so atrocious a manner. These reflections had changed our mode of acting in regard to the Indians. We repressed

pressed by force the smallest acts of injustice, or the most trifling thefts; we shewed them by the effects of our arms, that flight would not save them from our resentment; we refused them permission to come on board, and we threatened to punish with death those who should dare to violate the prohibition. This conduct was a thousand times preferable to our former moderation; and if we had any reason for regret, it was our having arrived among these people with principles of mildness and patience. Reason and common sense tell us, that we have a right to employ force against the man who we well know would be our assassin, if he were not restrained by fear.

The 23d, at noon, while we were trading for cocoa-nuts with the Indians, we were assailed by a heavy squall from the west-south-west, which dispersed the canoes. Many were overset, and after righting again paddled away in haste for the land. Notwithstanding the threatening state of the weather, we made the complete circuit of Traitors Island, in order to discover all its points, and lay down the plan of it with precision. M. Dagelet had taken a very good observation of the latitude at noon, and in the morning had observed the longitude of both islands, which enabled him to rectify the position assigned to them by Wallis. At four o'clock I made the signal to steer south-south-east towards

CHART
of the Archipelago of
NAVIGATORS ISLANDS,
Discover'd by BOUGAINVILLE
In March 1768.
And Explored by the BOUSSOLE and
ASTROLABE in Dec^r 1787.



173°

45'

30'

15'

172°

45'

30'

15'

OPOUN



OPOUN taken at A



taken at B



F

D

C

FANFOUÉ

Leone

December 1787

OPOUN

Sable et Coquilles pourries
Anse du Mafsaerce

MAOUNA



MAOUNA taken at D



taken at E



OPOUN taken at C



taken at D

173°

45'

30'

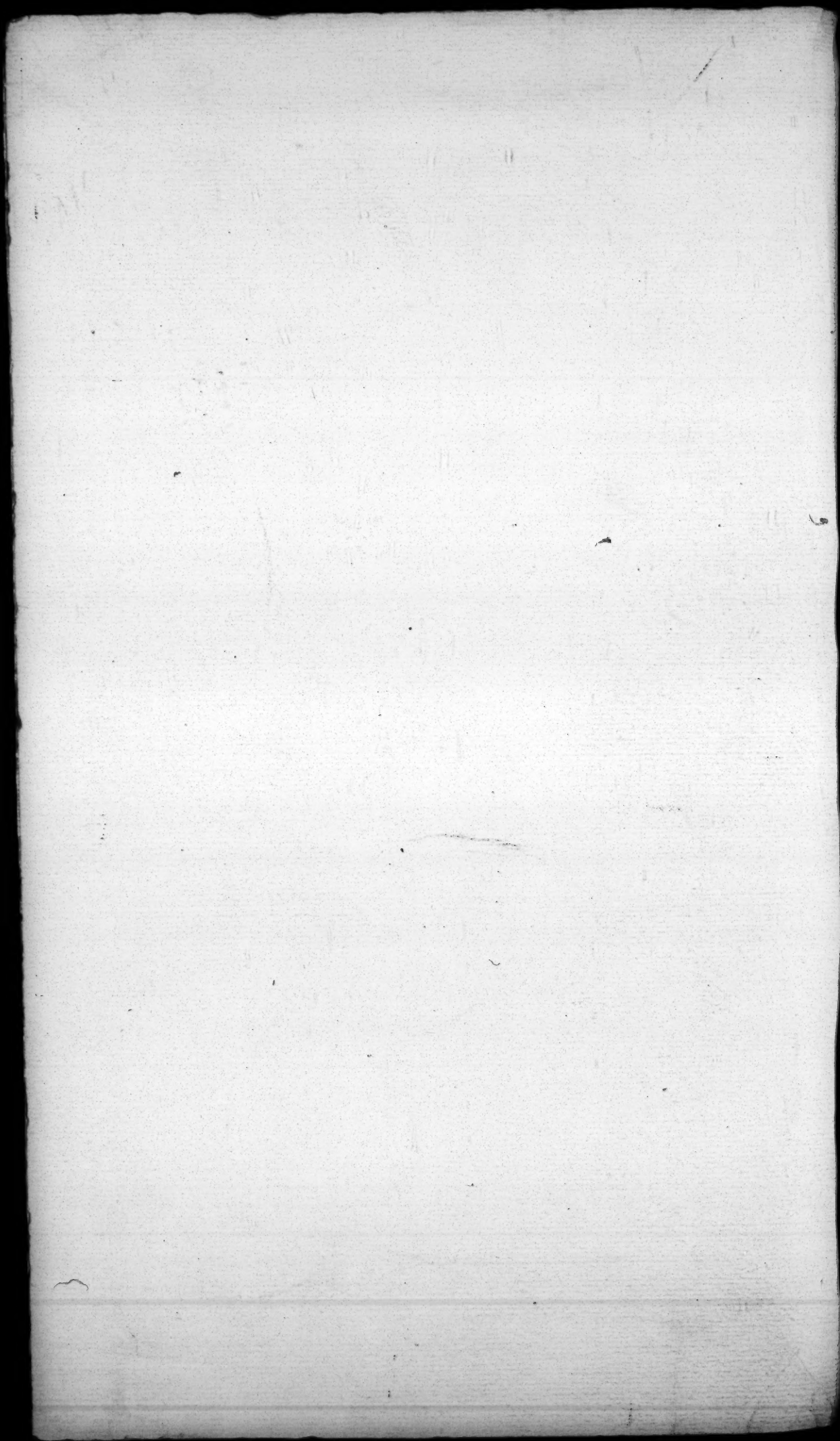
15'

172°

45'

30'

15'



towards the archipelago of the Friendly Islands, purposing to reconnoitre such as captain Cook had not had an opportunity of exploring, and which, according to his accounts, I might expect to find to the north of Inamooka. ✓

CHAPTER XXVI.

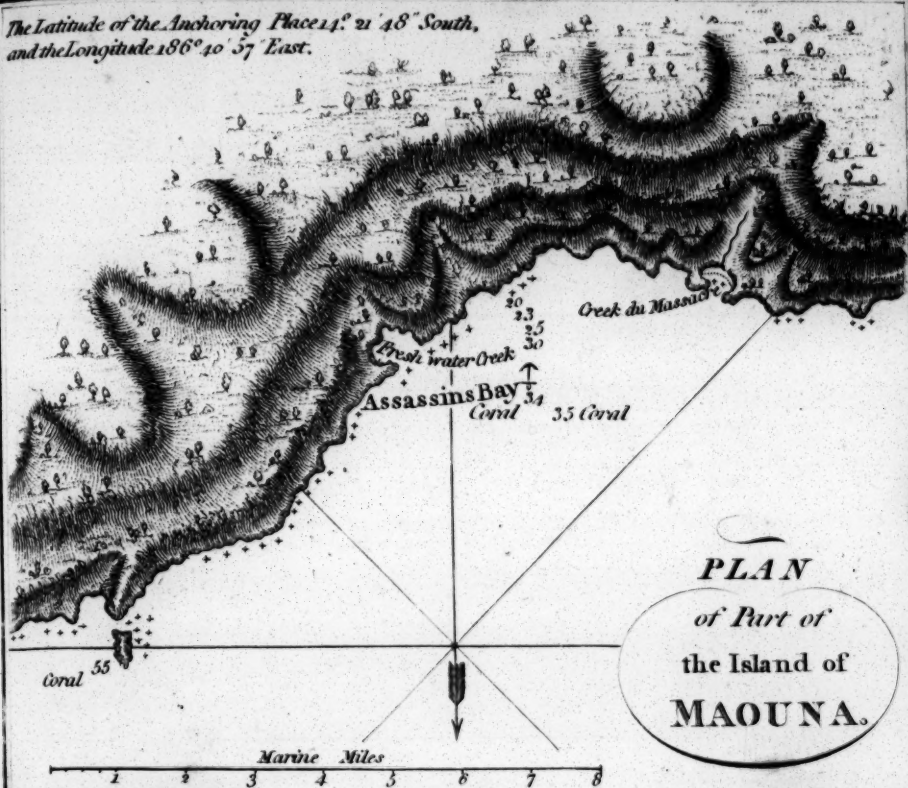
Departure from the Islands of Navigators.—We direct our route towards the Friendly Islands.—Fall in with the island of Vavao, and several others of that archipelago very ill laid down in the charts.—The inhabitants of Tongataboo hasten on board to trade with us.—We anchor at Norfolk Island.—Description of that island.—Arrival at Botany Bay.

(DECEMBER 1787. JANUARY 1788.)

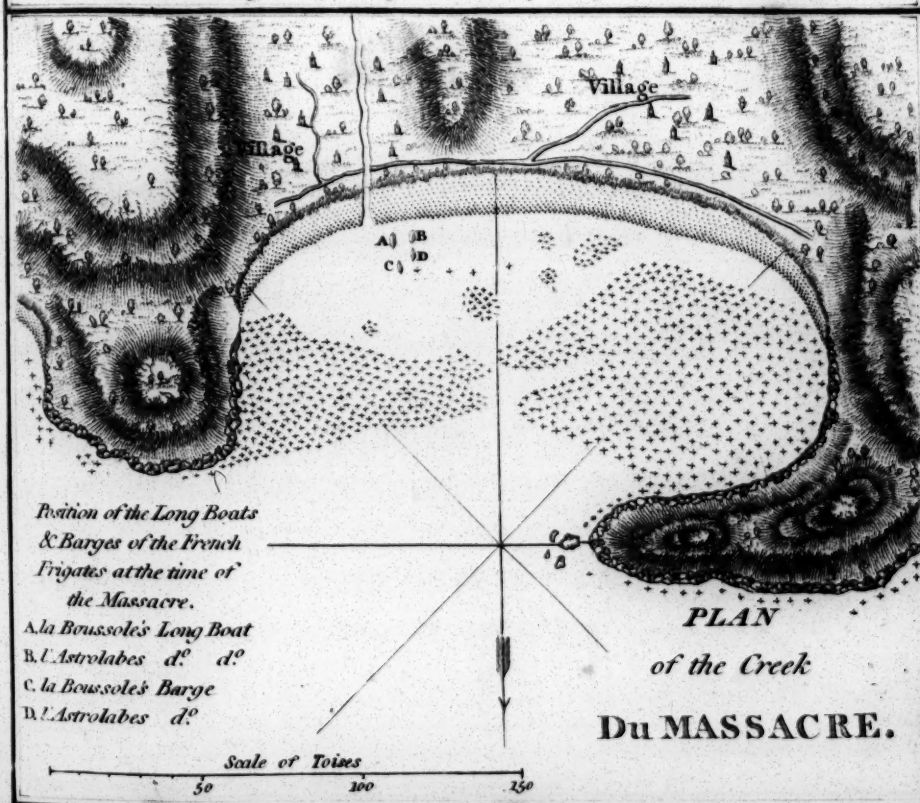
THE night after our departure from Traitors Island was a dreadful one. The wind shifted to the west, and blew hard, with a great deal of rain. As the horizon did not extend a league at sunset, I lay to till the next morning with the ship's head to the south-south-west, the west wind still continuing violent, and being still accompanied by heavy showers.

All those who had any symptoms of scurvy suffered exceedingly from the humidity of the atmosphere. None, indeed, of the crew, was attacked by that disease; but the officers, and our servants in particular, began to feel its effects. I attributed

The Latitude of the Anchoring Place $14^{\circ} 21' 48''$ South,
and the Longitude $186^{\circ} 10' 57''$ East.



PLAN
of Part of
the Island of
MAOUNA.



Position of the Long Boats
& Barges of the French
Frigates at the time of
the Massacre.

- A. la Boussole's Long Boat
- B. l'Astrolabe d'e d'e
- C. la Boussole's Barge
- D. l'Astrolabe d'e

PLAN
of the Creek
Du MASSACRE.

4 AP 54

it to the want of fresh provision, which was less sensibly felt by the sailors than by the domestics, who had never been at sea, and consequently were not accustomed to such privations. A man of the name of David, the gun-room cook, died on the 10th, of a scorbutic dropsy. Since our departure from Brest, not one individual on board the *Boussole* had before died a natural death; and if we had only made a common voyage round the world, we should have returned to Europe without the loss of a single man. The last months of a long voyage are always the most difficult to support; the body grows weaker with time, and the provision spoils; but if there be limits that cannot be passed, in the length of voyages of discovery, it is important to be acquainted with those that may be attained; and I think that on our return to Europe the experiment in that respect will be complete. Of all the known preservatives against the scurvy, melasses and spruce beer are, in my opinion, the most efficacious. Our ships companies continued to drink them in hot climates; a bottle per day being distributed to each person with half a pint of wine, and a small glass of brandy, diluted with a great deal of water; which served to render their provision more palatable. The great quantity of hogs which we had procured at Maoua was but a transient resource. As we could not salt them because they were too small, or keep them for want of

proper food for their subsistence, I determined to serve out fresh pork twice a day to my crew: then the swelling of the legs and all the other symptoms of scurvy disappeared. This new regimen had the same effect upon our health as a long stay in port; which proves, that seamen have a less urgent need of land air than of salubrious aliments.

The north-north-west winds followed us beyond the archipelago of the Friendly Islands. They were always accompanied with rain, and blew as hard as the western gales that often prevail in the winter upon the coast of Brittany. We knew very well, that we were in the winter season, and consequently in that of storms and hurricanes; but we did not expect to meet with such constant bad weather. The 27th of December, we discovered the island of Vavao, of which the western point at noon bore precisely west, our latitude being $18^{\circ} 34'$. This island, which captain Cook never visited, but with the existence of which he was acquainted by the report of the inhabitants of the Friendly Islands, is one of that archipelago; being not only almost equal to that of Tongataboo in extent, but having, from its greater elevation, the advantage over it of never wanting fresh water. It is in the midst of a great number of other islands, which, no doubt, bear the names captain Cook has given a list of, but which it would be extremely difficult for us to

I

class.

class. It would be unjust to attribute to ourselves this discovery, which is due to the Spanish pilot Maurelle, and which adds to the archipelago of the Friendly Islands a number almost as considerable as that of those already explored by the English navigator.

I had procured at China an extract from the journal of the above Spanish pilot, who set off from Manilla in 1781, to execute a commission in America. He purposed going thither by the southern hemisphere, following pretty nearly M. de Surville's track, and endeavouring to get into a high latitude, where he expected with reason to meet with westerly winds. Maurelle was unacquainted with the new methods of determining the longitude; nor had he ever read any of the relations of modern navigators; but was guided in his voyage by the old French charts of Bellin, and made amends by the greatest exactness in his reckoning and bearings, for the imperfections of his method, of his instruments, and of his charts. Like M. de Surville, he coasted along New Ireland, and perceived several small islands which Messieurs de Bougainville, Carteret, and Surville, had already gotten sight of. He also discovered three or four new ones, and thinking himself near Solomon's Islands, fell in with a land to the north of Vavao, which he called *Magoura*, because it did not afford him any of the refreshments of which he stood in need. He had no opportunity of seeing

another island to the east of it, which we fully discovered, and which cannot be perceived at more than three or four leagues distance, on account of its being very low and flat. At length he arrived at Vavao, where he anchored in a pretty good port, and procured water, and a considerable quantity of provision. The particulars of his relation were so true, that it was impossible not to recognize the Friendly Islands, and equally difficult to mistake the portrait of Poulaho, who, being principal chief of all those islands, inhabits several of them occasionally, but seems to make Vavao his more particular residence. I shall enter into no farther details of this voyage, which I have only mentioned from a principle of justice towards pilot Maurelle. He had called the cluster of Vavao the *Islands of Majorca*, after the name of the viceroy of New Spain, and that of Happae, the Islands of Galvez, after the name of the brother of the minister for the Indian department; but being persuaded that it is infinitely preferable to preserve the country names, I thought proper to insert no others in M. Bernizet's plan. That plan has been constructed according to the latitudes and longitudes determined by M. Dagelet, far more exact than those of the Spanish navigator, who laid down these islands about six degrees too far to the westward. This error, copied from century to century, and sanctioned by successive geographers, would have given birth to a new archipelago,

archipelago, having no real existence but in the charts.

We made several boards during the 27th, in order to near the island of Vavao, from which we were kept at a small distance by the west-north-west wind. Having made a long stretch to the northward during the night, by way of extending my view twelve or fifteen leagues beyond the island, I got sight of Maurelle's Magoura, which bore east; and having approached it, I saw another island, of little elevation, and covered with trees. The island of Magoura, on the contrary, is high land, and it is more than probable that both of them are inhabited. After we had taken all our bearings, I bore up for the island of Vavao, which was only to be seen from the mast head. It is the most considerable of the Friendly archipelago, the other islands scattered to the northward and westward not being comparable to it. Towards noon, I was at the entrance of the port in which Maurelle had anchored. It is formed by small islands of some elevation, which have narrow, but very deep passages between them, and which afford complete shelter against the winds from the offing. This harbour, infinitely superior to that of Tongataboo, would have suited me perfectly well for a stay of a few days; but the anchorage is within two cables length of the shore; and in that position, a long-boat is often necessary to carry out an anchor in order to get off the coast.

Every instant I was tempted to lay aside the plan I had formed when leaving Maouna, of putting into no port till I should reach Botany Bay; but reason and prudence made me resume it. I was desirous, however, of making some acquaintance with the islanders; and brought to at a small distance from the land; but not a single canoe came near the ships. The weather was so bad, and the sky wore such a threatening aspect, that I was little surprised at it; and as the horizon became every moment more and more loaded with clouds, I stood away myself to the westward before night came on, steering towards the island of Latté, of which we were in sight, and which in clear weather is to be seen at twenty leagues distance. The name of Latté is mentioned in the list of the Friendly Islands given by Cooke; and it was also assigned to the same island by Maurelle, in his Journal, in consequence of information given him by the inhabitants of Vavao, who told him besides, that it was inhabited, and that ships might anchor there. It is easy from this to perceive how much it imports to geography to preserve the true names of countries; for if, like the navigators of former times, or like Maurelle himself, we had had an error of seven or eight degrees in our longitude, we might have supposed, on meeting with this island, that we were at a great distance from the Friendly archipelago. The conformity of language, of manners, and of dress, would
not

not have sufficed to remove our doubts, because it is well known, that there is a great resemblance between all these people, though situate very far from one another; whereas the identity of name, and a very slight description of the figure and extent of the island, formed a certain proof of the identity of place.

The following night was dreadful: the darkness in which we were involved was so impenetrable, that it was impossible to see any thing around us. As in this state of the atmosphere it would have been very imprudent to stand on in the midst of so many islands, I determined to make short tacks till day-break; but when the day came, it was still more tempestuous than the night. The barometer had fallen three lines, and if it were possible for a hurricane to blow harder, it certainly could not be announced by weather of a more unpleasant appearance. I steered a course, however, for the island of Latté, and stood within two miles of it, though very certain that no canoe would dare to put to sea. I was so overpressed under that island by a squall, that I was obliged to bear away towards the islands of Kao, and Toofoa, from which we must have been but at small distance, although the mist did not permit us to distinguish them. These two islands were laid down for the first time upon captain Cook's charts. He passed through the channel two miles in width, that separates them

from one another, and determined the latitude and longitude with the greatest accuracy. It was highly desirable for us to take this opportunity of verifying the longitude given by our time-keepers. It is true, that I purposed going near enough to Tongataboo, in order entirely to complete the comparison. M. Dagelet with reason regarded the observatory of Tongataboo as that of Greenwich, the determination of its latitude and longitude being the result of more than ten thousand sets of observations, taken in the space of four or five months by the indefatigable Cook. At five o'clock in the evening, the weather cleared up, and exhibited to our view the island of Kao, resembling in form a very lofty cone, and perceptible at the distance of thirty-leagues, when the atmosphere is clear. The island of Tofoa, though also very high, did not shew itself, but continued still enveloped in the fog. I passed the night, like the preceding one, standing off and on, but under the main-top-sail and fore-sail only; for it blew so fresh, that we could carry no other sail. The next day the weather was tolerably clear, and at sun-rise the islands of Kao and Tofoa were both in sight. I ran within half a league of the latter, and convinced myself that it was uninhabited, three parts of the way round at least; for I stood near enough in to distinguish the stones upon the beach. This island is very mountainous and steep; is covered

covered with trees to the summit; and may be about four leagues in circumference. I imagine that the inhabitants of Tongataboo, and the other Friendly Islands, often land there in the summer season to cut down trees, and probably to construct their canoes; for they are in want of wood in the low islands, where they have preserved no trees but those which, like the cocoa palm, bear fruit fit for their subsistence. In running along the island we saw several slides or inclined planes, by which the trees cut upon the mountain's side roll down to the sea shore; but there were neither huts, nor ground cleared away among the woods; nothing, in short, that announced its being inhabited. While thus continuing our route towards the two little islands of Hoonga-tonga and Hoonga-hapae, we shut in the island of Kao, with the middle of Toofoa, so that the former appeared to be only the summit of the latter; and in this position we found its bearing to be north 27° east. The island of Kao is about three times as high as the other, and resembles the peak of a volcano: its base appeared to be less than two miles in diameter. We also observed on the north-east point of the island of Toofoa, on the side of the channel that separates it from Kao, a country absolutely burnt up as black as a coal, and entirely destitute of trees and verdure, which has probably been ravaged by a flood of lava. Towards noon we got sight of the two islands of
Hoonga-

Hoonga-tonga and Hoonga-hapae. They are laid down in a chart of the Friendly Islands, inserted in *Cook's Third Voyage*; but that chart does not exhibit a very dangerous reef of rocks two leagues in extent, of which the direction is nearly north by west, and south by east. Its northerly point is five leagues north of Hoonga-hapae, and its southerly point three leagues north of Hoonga-tonga, forming with the two islands a strait three leagues wide. We ran along it at a full league's distance to the westward, and perceived its breakers rising mountain-high; but it is possible that in calmer weather it shews itself less, and is consequently much more dangerous. The two small islands of Hoonga-tonga and Hoonga-hapae, are no better than two large uninhabitable rocks, high enough to be seen at the distance of fifteen leagues. Their form changes every moment, so that any view which it might have been possible to take would only have agreed with them in one particular point of sight. They appeared to be of equal extent, and less than half a league each in circumference. They are separated by a channel a league wide, lying in the direction of east-north-east and west-south-west. Their position is ten leagues north of Tongataboo; but as that island is low, it is only to be seen at half the above distance. At six o'clock in the morning of the 31st of December, we perceived it from the mast-head, nothing appearing at first but
the

the tops of trees that seemed to grow in the water; but in proportion as we drew nearer we rose the land, though only to the height of two or three toises. Soon after we made Van Diemen's point, and the ridge of breakers without it; the former, at noon, bearing east, distant about two leagues. As the wind was northerly, I steered for the south coast of the island, which is free from danger, and may be approached within three musket shots. The sea broke with fury all over the coast; but the surf was close in shore, and beyond it we perceived the most beautiful orchards, the whole island appearing cultivated, and the trees skirting fields of the most delightful green. We were then, it is true, in the rainy season; and notwithstanding the charms of our present prospect, it is more than probable, that during a part of the year, the most horrible drought must prevail in so low an island. Not a single hill was to be seen; even the sea in calm weather does not present a more level surface to the eye.

The huts of the natives were not collected in villages, but scattered over the fields, like the country-houses in our best cultivated plains. Soon after seven or eight canoes were launched, and advanced towards our ships; but these islanders, being better cultivators than seamen, managed them awkwardly, and did not dare to approach our vessels, though we were lying to, and though the water was very smooth. At eight or ten toises
distance,

distance, they leaped overboard and swam to us, holding in each hand cocoa-nuts, which they exchanged with great honesty for bits of iron, nails, and little hatchets. Their canoes differ in no respect from those of the islands of Navigators, except that none of them have sails, which it is probable that they would not know how to manage. The greatest confidence soon took place between us: they came on board; we talked to them of Poulaho and Feenou, and had the air of being old acquaintance, who meet after absence, and converse about their friends. A young islander gave us to understand, that he was the son of Feenou, and this falsehood or truth, whichever it was, procured him several presents: he uttered a cry of joy on receiving them, and sought to make us understand by signs, that if we would go and anchor upon the coast, we should there find provision in abundance, their canoes being too small to bring them out into the open sea: in effect they had neither fowls nor hogs with them, their whole cargo consisting of a few bananas and cocoa-nuts. As the smallest wave is sufficient to upset these ticklish vessels, any animal would have been drowned before it could have been gotten on board. These islanders were noisy in their manners; but their features were not at all expressive of ferocity, and neither their size, nor the proportion of their limbs, nor the supposed strength of their muscles, was sufficient to give

us

us any alarm, even if they had been unacquainted with our weapons. Their physical constitution, though not inferior to ours, did not appear to have any advantage over that of our sailors: at the same time their language, their manner of tatooing, and their dress, all announced their common origin with the inhabitants of the Islands of Navigators; and it is evident, that the difference that exists in the individual proportions of these people only proceeds from the aridity of the soil, and the other physical circumstances of the territory and climate of the Friendly archipelago. Of the hundred and fifty islands which compose this archipelago, the greater number consists only of uninhabited and uninhabitable rocks; and I should not feel any hesitation in asserting, that the island of Oyolava alone exceeds in population, fertility, and real strength, all these islands put together, in which the natives are obliged to procure their subsistence from the earth by the sweat of their brow. It is, perhaps, to this necessity for agriculture, that they are indebted for the progress of civilization, and the invention of several arts, which make amends for their want of natural strength, and protect them from the invasion of their neighbours. We saw, however, no arms among them but patow-patows. Several that we bought did not weigh a third as much as those which we had procured at Maoua, and which the natives

natives of the Friendly Islands would have been utterly unable to wield.

The custom of cutting off two joints of the little finger is as general among these people as at Cocoa and Traitors islands; while that mark of grief for the loss of a parent or a friend is utterly unknown at the Navigators Islands. I know that captain Cook considered Cocoa and Traitors Islands as belonging to the Friendly archipelago; and this opinion he supported by the report of Poulaho, who was acquainted with the trade that captain Wallis had carried on in those two islands, and who even possessed in his treasury, before captain Cook's arrival, several bits of iron, proceeding from the exchanges made by the Dolphin frigate with the inhabitants of the Isle of Traitors. I thought, on the contrary, that those two islands were comprised in the ten enumerated by the inhabitants of Maoua, because I found them precisely in the point of the compass indicated by them, and farther east than captain Wallis had laid them down; and I was of opinion that they might form with Quirot's Island of the Handsome Nation, the complete group of the finest and largest archipelago of the South Sea; but I confess that the natives of Cocoa and Traitors islands have a much stronger resemblance in stature and external forms to the inhabitants of the Friendly Islands, than to those of the Isles of Navigators,

gators, from which they are nearly equidistant. After having thus explained the motives of my opinion, I feel little reluctance in subscribing upon all occasions to that of captain Cook, who made so long a stay in the different islands of the South Sea.

All our intercourse with the inhabitants of Tongataboo was confined to a single visit, and seldom is a visit made at so immense a distance from home. We received from them only such refreshments as are given to neighbours in the country; but M. Dagelet had an opportunity of ascertaining the rate of going of our time-keepers. The great number of observations made, as I have said above, by captain Cook at Tongataboo, did not leave him any doubt as to the exact position of the Resolution's observatory, and he thought he might make it in some sort a first meridian, by adjusting to it the relative positions of the whole Friendly archipelago, and even of the other islands that we had visited in the Southern hemisphere. The result of his observations, obtained by a great number of distances of the sun and moon, differed less than seven miles from that of captain Cook: thus M. Dagelet, while admitting the longitudes of that celebrated navigator, followed also his own; and he convinced himself, that the comparisons established upon determinate points might increase the degree of confidence given to the time-keepers, but were not
necessary

necessary to their verification; a series of distances from the sun to the moon being perfectly satisfactory in that respect. From this conformity of our observations it may be safely concluded, that supposing we had had no knowledge of captain Cook's voyages, the archipelago of Navigators, and the cluster of the Vavao Islands, would nevertheless have had geographical positions on the charts within five or six miles of those they now occupy.

On the first of January, at the coming on of night, having lost all hope of obtaining, while thus plying in the offing, a sufficiency of provision even to compensate our consumption, I came to the resolution of bearing away to the west-south-west, and running to Botany Bay along a track which no navigator had as yet taken. It was no part of my plan to reconnoitre the Island of Pylstaart, which was discovered by Tasman, and of which captain Cook had determined the position; but the wind having shifted from the north to the west-south-west, forced me to make a stretch to the southward; and in the morning of the 2d I perceived that island, of which the greatest width is a quarter of a league. It is very steep, has only a few trees on the north-east coast, and can serve as a retreat for aquatic birds alone.

This little island, or rather this rock, bore west of us, at half past ten in the morning. Its latitude, observed at noon by M. Dagelet, was found to be

22° 22', that is, four miles north of the latitude assigned to it by captain Cook, who, having determined it by distant bearings, was necessarily liable to mistake.

The calms we met with afforded us many opportunities of verifying and correcting our observations. For three whole days we remained in sight of this rock. The sun, which we had in the zenith, prolonged these calms, which are a thousand times more tiresome to seamen than contrary winds. We waited with the greatest impatience for a breeze from the south-east, which we hoped to meet with in these seas, in order to make our passage to New Holland. The wind had constantly blown from the westward since the 27th of December, never varying but from north-west to south-west, whatever might be the strength of the gale. Hence it appears, that the trade winds are very uncertain in these latitudes. They blew, however, from the east, on the 6th of January, and varied to the north-east, the weather growing very thick, and the sea beginning to run very high. They continued in the same points with a great deal of rain, and a contracted horizon, till the 8th, when we had steady and very strong breezes from the north-east to the south-east, the weather being dry, and the sea exceedingly rough. As we had passed the latitude of all the islands, the wind had now resumed its regular course, which had been entirely interrupted.

from the line to 26° south: the temperature of the air was also much altered, and the thermometer * had fallen six degrees, either because we had gotten beyond the sun; or, what is more probable, because the strong easterly breezes and a gray sky weakened its influence; for it was only four degrees from our zenith, and its rays had consequently very little obliquity. The 13th we got sight of Norfolk Island, and of the two islets at its south point. The sea was very high, and had so long continued so, that I had little hope of meeting with shelter on the north-east coast. On approaching it, however, I found smoother water, and determined to let go the anchor at a mile from the land, in twenty-four fathoms water, over a bottom of hard sand, mixed with a little coral. I had no other object than to obtain a knowledge of the soil and productions of this island by means of our naturalists and botanists, who, since our departure from Kamtschatka, had had very few opportunities of entering any new observations in their journals. We however saw the sea break with fury round the island; but I flattered myself, that our boats would find a shelter behind the large rocks that skirt the coast. As we had learned, however, to our cost, never to depart from the rules of prudence, I charged M. de Clonard,

* The thermometer used by the French is always that of Reaumur. T.

a post captain, and the second officer in the expedition, with the command of four small boats dispatched by the frigates, and I strictly enjoined him not to risk a landing, under any pretence whatever, should there be the smallest risk of our pinnaces being overset by the surf. His punctuality and prudence left me without fear or apprehension. No one indeed could better deserve my confidence than that officer, whom I destined to the command of the *Astrolabe*, as soon as we should arrive at Botany Bay. Our frigates were anchored abreast of two points situated at the northern extremity of the north-east coast of the island, and opposite to the place where we supposed that captain Cook had debarked. Our boats stood towards this kind of inlet; but they found a surf breaking upon the rocks with a fury which rendered all approach impossible. They coasted along shore within half musket shot, pulling up to the south-east, and went half a league in that direction without finding a single spot where it was possible to land. They perceived that the island was surrounded by a wall formed of the lava which had flowed from the summit of the mountain, and which, having cooled in its descent, had formed in a number of places a kind of roof projecting several feet over the coast of the island. Even if landing had been practicable, it would still have been impossible to penetrate into the interior, unless by stemming

for the space of fifteen or twenty toises the rapid course of some torrents that had formed ravines. Beyond these natural barriers, the island was covered with pines, and carpeted with the most beautiful verdure. We should probably have found there several culinary plants; and that hope added still to our desire of visiting an island, where captain Cook had debarked with the greatest facility. It is true, that he was there in fine weather that had lasted several days, while we had constantly navigated in so high a sea, that for eight days we had not dared to open our ports or cabin windows. From the ship I followed with my telescope the motions of the boats; and seeing that at the fall of night they had not found a convenient place of debarkation, I made a signal to recall them, and soon after gave orders to get under way. I should perhaps have lost a great deal of time in waiting for a more favourable moment, and the survey of the island was not worth such a sacrifice. While I was preparing to make sail, a signal from the *Astrolabe*, indicating that she was on fire, threw me into a state of the utmost anxiety. I immediately dispatched a boat in all haste to her assistance, but by the time it had gotten half way, another signal informed me, that the fire was extinguished; and shortly after M. de Monti hailed me with a speaking trumpet, and told me, that a box of acids and other chemical liquors, belonging to father Receveur, and deposited under the quarter

ter deck, had taken fire of itself, and spread so thick a smoke below, that it had been difficult to discover whence it proceeded. At length means were found to throw the box overboard, and the accident was attended with no farther consequences. It is probable, that a bottle of acid, having burst in the inside of the box, occasioned the fire, which afterwards extended itself to bottles of spirits of wine either broken or ill-corked. I now gave myself credit for having, at the very beginning of the voyage, ordered a similar box, belonging to the abbé Mongès, to be placed in the open air upon the forecastle of the ship, where danger from fire was not much to be apprehended.

Norfolk island, though very steep, is scarcely more than seventy or eighty toises above the level of the sea. The pines, with which it is covered, are probably of the same species as those of New Caledonia, or New Zealand. Captain Cook says, that he met with a great many cabbage trees; and the hope of procuring some contributed not a little to our desire of landing. It is probable, that the palm, which bears these cabbages, is very small, for we could not perceive a single tree of that species. As this island is not inhabited, it is covered with sea fowl, particularly tropic birds, none of which are without their long red feathers. There were also a great many boobies and gulls, but not a single man-of-war bird. A bank of sand, over

which there are twenty or thirty fathoms water, extends three or four leagues to the northward and eastward of the island, and perhaps all round it; but we did not sound on the western side. While we lay at anchor we caught some red fish upon the bank, of the kind called *capitaine* at the isle of France, or *sarde*, which afforded us an excellent repast. At eight o'clock in the evening we were under way. I first stood west-north-west, and then bore away by degrees to south-west by west, under easy sail, and sounding continually upon the bank, where it was possible we might meet with shoals; but the bottom was, on the contrary, exceedingly even, and the water deepened foot by foot in proportion as we left the land. At eleven o'clock in the evening we got no ground with a line of sixty fathoms, being then ten miles west-north-west of the most northerly point of Norfolk island. The wind had settled at east-south-east, with rather thick squalls; but in the intervals between them the weather was very clear. At day-break I crowded sail towards Botany Bay, which was now at no more than three hundred leagues distance. The 14th, in the evening, after the sun was beneath the horizon, I made the signal to bring to, and to sound with two hundred fathoms of line. The flat bank of Norfolk island had made me imagine that bottom might be found all the way to New Holland; but this conjecture proved false, and I continued my
course,

course, with an error the less in my mind; for I had been strongly persuaded of the truth of my opinion. The wind from east-south-east to north-east continued to blow till we came within sight of New Holland. We made a great deal of way by day and very little by night, because no navigator had preceded us in the track along which we were running.

On the 17th, being in $31^{\circ} 28'$ south latitude, and $159^{\circ} 15'$ east longitude, we were surrounded by innumerable gulls, which made us suspect that we were passing near some island or rock; and several bets were laid on the discovery of new land before our arrival at Botany Bay, from which we were only a hundred and eighty leagues distant: these birds followed us till within eighty leagues of New Holland, and it is probable enough, that we had left some islet or rock behind us, which serves them as an asylum, for they are much less numerous near an inhabited country. From Norfolk island, till we got sight of Botany Bay, we sounded every evening, with two hundred fathoms of line, and did not find bottom till within eight leagues of the coast in ninety fathoms water. We got sight of it on the 23d of January. The land is of very moderate elevation, and can hardly be seen at more than twelve leagues distance. The wind then became very variable, and, like captain Cook, we met with currents which drifted us every day fifteen miles to

the southward of our reckoning; so that we passed the whole day of the 24th in plying to windward in sight of Botany Bay, without being able to double Point Solander, which bore north distant one league. The wind blew strong from that quarter, and our ships failed too badly to be able to overcome the force of both wind and currents. We had this day a sight entirely new to us since our departure from Manilla. It was an English fleet at anchor in Botany Bay, of which we could distinguish the colours and pendants.

Europeans are all fellow-countrymen at such a distance from home, and we felt the greatest impatience to get into an anchorage; but the weather was so hazy the following day, that it was impossible to distinguish the land; and we did not get in till the 26th, at nine in the morning, when I let go the anchor at a mile from the north coast in seven fathoms water, over a bottom of fine grey sand, abreast of the second bay. At the moment I was at the mouth of the channel, an English lieutenant and a midshipman were sent on board my ship by captain Hunter, commander of the English frigate the *Sirius*. They offered me in his name all the services in his power, adding, however, that as he was on the point of getting under way, in order to run to the northward, circumstances would not permit him to furnish us either with provision, ammunition, or sails; so that his services were confined to wishes
for

for the farther success of our voyage. I sent an officer to return my thanks to captain Hunter, who was already apeak, with his top-sails hoisted. I intimated to him that my wants did not extend beyond wood and water, of which we should find plenty in the bay; and that I was sensible that ships destined to establish a colony at so great a distance from Europe could afford no succour to navigators. We learned from the lieutenant, that the English fleet was commanded by commodore Phillips, who had gotten under way the evening before in the *Spy* sloop, accompanied by four transports, in order to seek farther to the northward for a more convenient place for his settlement. The English lieutenant appeared to make a great mystery of commodore Phillips's plan, and we did not take the liberty of asking him any question on the subject; but we could have no doubt of the projected establishment being very near Botany Bay; for several boats and launches were under sail in their way thither; and the passage must needs have been short indeed, to render it unnecessary to hoist them into the ships. Soon after the crew of the English boat, who were less cautious than their officers, told our sailors, that they were only going to Port Jackson, sixteen miles to the north of Cape Banks, where commodore Phillips had himself found out a very good harbour, running in ten miles to the south-west, and allowing vessels to anchor within pistol-shot of the land, in water as smooth

as that of a basin. We had, in the sequel, but too many opportunities of hearing news of the English settlement from deserters, to whom we were indebted for a great deal of trouble and embarrassment*.

* Here ends the journal of La Pérouse. I will not repeat what I have said in the preliminary discourse concerning the fate of that illustrious though unfortunate navigator. I think I have completely refuted all the absurd assertions relative to the probability of his existence. I refer the reader to that discourse; and I request him to read in the subsequent part of this volume, the last letter which he wrote from Botany Bay to the minister of marine. He there gives an account of the route he means to take previous to his arrival at the Isle of France; and from the simple chain of reasoning which it presents to seamen, it no longer leaves a hope of his return. (*Fr. Ed.*)

EXTRACT OF A JOURNAL
TO
THE PEAK OF TENERIFFE,

BY M. M. DE LAMANON AND MONGÈS,

On the 24th of August 1785;

And the results of some chemical experiments made on the summit of the mountain; together with a description of some new varieties of volcanic Schörls.

THE crater of the Peak is a true *solfatara*, perfectly analogous to those of Italy; its length is about fifty toises, its breadth forty, and it rises abruptly from west to east.

On the sides of the crater, especially towards the lower part, are several vents or chimneys, from which steam and sulphureous acid are continually exhaling: the heat of these vapours is so great as to raise the thermometer ~~from~~ nine to thirty-four degrees. The inside of the crater is covered with yellow, red, and white clay, and blocks of partly decomposed lava, under which are found beautiful crystals of sulphur; their figure is that of a rhomboidal octaedron, some of which are nearly an inch high,

high, and are perhaps the finest specimens of native volcanic sulphur yet known.

The steam arising from the vents appeared, from the taste and some experiments, to be pure water.

The elevation of the Peak above the sea being about 1900 toises, induced me to make on its summit several chemical experiments, in order to compare their results with what takes place in our laboratories: it will be sufficient to give the results without encumbering the reader with the detail.

The volatilization of liquids and the consequent production of cold was very considerable, a minute was sufficient for the evaporation of a full dose of ether.

The action of acids on metals, earths, and alkalis, was slow, and the bubbles that escaped during the effervescence were of a much greater size than usual. The production of vitriols was attended with some singular phenomena; that of iron became instantly of a beautiful violet colour, and that of copper was suddenly precipitated of a bright blue.

I examined the humidity of the atmosphere by means of the hygrometer, pure alkali, and sulphuric acid, and conclude, that during the absence of clouds the air is very dry, for at the end of three hours the sulphuric acid had not undergone any change of colour, or gained any increase of weight: the fixed alkali remained dry, except on the edges of the vessel, where it appeared to be a little damp;
the

the index of the hygrometer pointed to 64 degrees, but we could not fix it with perfect exactness on account of the violence of the wind.

The smell and strength of liquids appeared to be not in the least impaired by this height, contrary to the extraordinary accounts of some even modern travellers: volatile alkali, ether, and spirit of wine, possessed their usual pungency. The fuming liquor of Boyle was the only one that suffered any perceptible loss of strength; its evaporation, however, was not retarded, for in thirty seconds a small quantity that I poured out had disappeared, leaving behind only the sulphur, which gave a reddish tinge to the sides and bottom of the vessel. On the addition of a little sulphuric acid to this liquor it detonated briskly, and the vapour that arose had a sensible degree of heat.

I attempted to produce the volatile alkali by decomposing sal ammoniac by fixed alkali, but its effect was slow, and hardly to be perceived, whereas on the sea-shore an equal quantity of materials produced it readily and in great abundance.

Desirous of ascertaining the nature of the vapours which were rising from the crater, particularly, whether they contained any inflammable air, fixed air, or marine acid, I made the following experiments. Having exposed some nitrous solution of silver on the edge of one of the vents, and suffering it to remain above an hour amid the rising vapours,

pours, I perceived no alteration in it, which clearly showed the absence of marine acid: I then dropped in a little marine acid, and there ensued an immediate precipitation of corneous silver; but, instead of being white, as is commonly the case, it was of a fine dark violet colour, which presently became gray, assuming the form of little scaly crystals distinguishable by the naked eye, such as M. Sage observed. (Vid. *Min. docim.*) From some experiments that I have made on the precipitation of corneous silver in inflammable air, I am inclined to attribute its change of colour to the presence of that substance. Lime water, after an exposure of three hours on the side of the crater, in the neighbourhood of one of the vents, exhibited no pellicle, but merely a few floating detached threads; hence proving, that there is not only no exhalation of fixed air from the crater, but that the quantity of it contained in this elevated exposure is not equal to that of the lower atmosphere; inflammable and sulphureous vapours being the only ones that abound here.

The electricity of the atmosphere was pretty considerable, for the electrometer of M. Saussure, held in the hand about five feet from the surface, indicated three degrees of positive electricity, whereas on the ground it showed only one and a half.

The violence of the wind hindered me from making any experiments on boiling water upon the crater itself,

itself, but at the icy fountain it continued in a state of ebullition at 71° of Reaumur's thermometer, the mercury in the barometer being 19 inches, 1 line.

I met with some new varieties of volcanic schörls.

1. A triple crystal belonging to the class of octaedral unequal-sided prisms.
2. Black schörl in octaedral unequal-sided prisms, terminated by opposite triedral summits, the plans of which form two large irregular heptaedrons and a small scalene triangle produced by the truncature of the upper angle.
3. A compressed hexaedral prism, the two largest faces opposite, terminated at one end by an obtuse tetraedral pyramid, with trapezoidal plans; and at the other by a hexaedral pyramid composed of six trapezoidal plans; two of which, very small, are formed on the intervals of the two upper sides of the large hexagon of the prism.
4. Terminated at one end like the summit of the preceding crystal, and at the other by a diedral pyramid, all the edges of which are bevelled.
5. Terminated at one end by a tetraedral summit, and at the other by a heptaedral, composed of an irregular pentagon in the centre, five trapezoids on the sides, and a sixth on one of the angles.
6. Terminated at one end by a pentaedral summit, composed

composed of four pentagons surrounding a truncated rhomb; and at the other by a pentaedral summit differing from the first only in a triangular truncature of the edge of two of the trapezoids.

7. Black schörl with a hexaedral prism, terminated at one end by a heptaedral summit, composed of two irregular hexagons, two irregular pentagons, and three trapezoids; and at the other end by a tetraedral summit, the truncatures of which form; 1. Two great trapezoids and one rhomboid; 2. Two small regular trapezoids; and between the great and the small trapezoids three truncatures, the first hexagonal, the second pentagonal, and the third a scalene.

EULOGY OF LAMANON,

BY

CITIZEN PONCE.

Read at the public sitting of the free society of science, letters, and arts of Paris, assembled at the Louvre, the 9th Vendémiaire, 6th year.

WHEN an illustrious man has arrived at the termination of a long and brilliant career, dignified by heroic actions or sublime productions, the honours
paid

paid to his memory ought to be considered rather as the tribute of our gratitude, than the unavailing expression of our regret. His task has been accomplished, the fruits of his discoveries remain to us, the light that he has struck out continues to spread, and an existence prolonged to the period when age and enfeebled faculties will no longer admit of the brilliant conceptions of genius would add nothing to his glory, or the benefit of the public. But when a young man, endowed with rare virtues and early talents, is snatched from life by the consequences of his devotedness to science, such a loss must necessarily excite in us the most lively regret, since the hopes of his future services are buried with him in the grave.

Robert Paul Lamanon, of the academy at Turin, correspondent of the academy of sciences at Paris, and member of the Museum in the same city, was born at Salon in Provence, in 1752, of an old and respectable family. I shall pass over his education, for if that of a common man ought to be good, the man of genius will feel it his duty, and knows how to form for himself a new one. Being the youngest of his family, and in consequence condemned by custom to the indolent life of an ecclesiastic, Lamanon came to finish his preparatory studies at Paris. But he already felt for the study of science, that sublime branch of it, especially, which includes a knowledge of all the productions of nature, that innate

predilection, which is the surest earnest of success. And by the death of his father and elder brother having acquired the right of directing his own future exertions, he hastened to quit a profession, towards which he felt no partiality.

A prelate, then in high favour at court, hearing of Lamanon's intention of quitting his office of canon, offered him a considerable sum, to induce him to resign in favour of one of his dependents. The chapter of Arles, replied our young ecclesiastic, did not sell me my benefice, I shall, therefore, restore it in the same manner that I received it. Being endowed by nature with a sense of justice, which the prejudices of his education were never able to alter, he renounced by a particular act the barbarous advantage that the law allowed him, and refused to accept his paternal inheritance otherwise than as an equal sharer with his brothers and sisters.

Thus liberated from the trammels of his former profession, Lamanon applied himself with uncommon ardour to study. Eager to raise the awful veil, that conceals from our eyes the secrets of nature; persuaded, that even the greatest genius only amuses itself with false systems in the silence of a cabinet; convinced of the necessity of much and various observation, and of surprising Nature, as it were, in the very fact, in order to penetrate into the sublimity of her operations; our young philosopher, full of these ideas, travelled through Provence, Dauphine, and
scaled

scaled the Alps and Pyrenees. At the sight of these vast natural laboratories the bent of his mind burst forth instantaneously: he climbed to the summit of rocks, and explored the abyss of caverns, weighed the air, analysed specimens, and in his ardent fancy having attained the secrets of creation, he formed a new system of the world. On his return home, he applied with additional interest to the study of meteorology, mineralogy, natural philosophy, and the other branches of the history of nature.

Desirous of availing himself of the luminaries of science at the capital, Lamanon came to Paris*. Hence he made an expedition to England. During the passage, though much incommoded by sea-sickness, and in imminent hazard of being overwhelmed by the tumbling waves of a very stormy sea, he caused himself to be tied to the main-mast, in order to contemplate at leisure so grand and fearful a spec-

* The inhabitants of the commune of Salon, having lost a cause against their lord, unanimously elected Lamanon, with whose integrity and abilities they were well acquainted, to go and solicit of the council the repeal of an unjust decree, that had been obtained by partiality. The reply of the young philosopher on this occasion is an additional proof of his uncommon disinterestedness. As I intend, said he, to go to Paris on business of my own, I cannot think of accepting your offer of 24 livres daily pay: a twelfth of this sum will cover the extraordinary expences of the journies, that I shall be obliged to make to Versailles on your account. He had the satisfaction of complete success in the business thus undertaken.

tacle. The bursts of thunder, the howling of the wind, the brilliancy of the lightning, the glancing of the spray which covered him every moment, these objects, so terrible to an ordinary man, threw him into a kind of mental intoxication, and he has often told me since, that this day was the most exquisite of his whole life.

Convinced that the friendship of an eminent man elevates the soul, excites generous emulation, and becomes an additional stimulus to one whose delight is study, and whose most pressing want is an object on which to place his affection, Lamanon anxiously endeavoured to merit the regard of Condorcet, so well known by his talents and his misfortunes, who was implacably hunted down by a sect inimical to order and the laws, for having wished to lay the foundation of liberty on the ruins of anarchy. This academician, who already foresaw what he might one day arrive at, received him with distinction, and at length admitted him to his most intimate friendship.

During the three successive years that Lamanon spent at Paris, he followed with care the track of those learned societies, of which he had been elected a member. He became at this period, together with count de Gebelin, and some other philosophers and artists, one of the founders of the Museum, the greater part of the members of which are now reunited in the open society of sciences, letters, and arts at Paris.

Paris. Among the different papers of his that were read at various sittings of these societies, allow me to mention a notice of Adam de Crapone, one of the most skilful hydraulic engineers that has ever lived, to whom we owe the construction of several canals that fertilize our southern departments: a memoir on the Cretins, a species of Goitre to which the mountaineers of Savoy are subject; this paper abounds with profound observations and judicious reflections: a memoir on the theory of the winds, especially on the *mistral*, the cause of so much damage in the provinces of the south; this piece is one of the best that has appeared on the subject. We may also mention a very luminous treatise on the alteration in the course of rivers, particularly the Rhone; and lastly, another on an enormous bone belonging to some cetaceous fish, that was dug up at Paris in laying the foundations of a house in the *rue Dauphine*.

Having resolved again to revisit Switzerland and Italy, Lamanon first went to Turin, where he allied himself to the learned of that country. During his stay here, the brilliant novelty discovered by Mongolfier, which may perhaps be looked upon as one of those phenomena that precede great events, was occupying the attention of all the philosophers of Europe. Our lamented friend, desirous of making some experiments of this kind himself, ascended in a balloon from the city of Turin; but not perceiving

in this discovery, which had at first highly interested him, an object of public utility; not foreseeing, that one day, on the plains of Fleurus, it would be the cause of rallying and establishing victory under the standards of France, he returned to his favourite occupations. Pursuing his route from Piedmont, he visited Italy, and returned by Switzerland, where he explored the Alps and ascended the summit of Mont Blanc: thence returning, loaden with the spoils of the countries which he had traversed, to Provence, he employed himself in the arrangement of the interesting fruits of his journey.

I shall mention an example of the scrupulous exactness of his observations. Being convinced, that the plain of Crau, divided by the channel of the Durance, had formerly been a lake, he wished to be absolutely assured of it. For this purpose he collected a specimen of each of the stones that are to be found in this vast plain; the number of these he found to amount to nineteen, then tracing the course of the river towards its head, near the frontiers of Savoy, he observed, that above each junction of the tributary streams with the Durance, the variety of pebbles diminished. Afterwards ascending the current of each of these smaller streams, he discovered on their banks the original rock of every pebble that overspreads the plain of Crau; thus incontestably proving, that this plain was anciently a lake formed by the waters of the Durance, and the
streams

streams that fall into it. If all philosophers would conduct their examinations with equal precision, certain hypotheses, more brilliant than solid, would not find so many admirers: the charm of imagination, and the graces of style, would not so often encroach upon the imprescriptible rights of nature and truth *.

It was at the time when Lamanon was preparing for the press his great work on the *Theory of the Earth*, that government conceived the vast project of completing the discoveries of captain Cook: the academy of sciences was entrusted with the care of selecting men capable of rectifying our notions of the southern hemisphere, of improving hydrography, and advancing the progress of natural history. Condorcet, not knowing any one better qualified for this last department than Lamanon, wrote him an invitation to share the danger and glory of this great enterprise. He accepted with eager transport a proposal, that fulfilled his highest expectations, hastened to Paris, refused in a conference with the minister the salary that was offered, took a hasty leave of his friends, and departed for Brest.

On the 1st of August, 1785, the armament set

* During a fever which had already continued two months, Lamanon was informed, that a subterraneous sound was heard at Malherbes, sixteen leagues from Paris; eluding the vigilance of his friends, he hastened thither, and returned at the end of three days, bringing with him thirty pounds weight of stones. He had gone thirty-two leagues on foot, and had entirely gotten rid of his fever.

sail under the orders of an experienced commander, whose patriotism and scientific zeal were equal to his courage and good sense, and who had already merited the public confidence. The philosophers of all Europe were in expectation of those useful discoveries, the probable fruit of the zeal and talents employed in the expedition. The beginning of the voyage was prosperous. After various delays and a multitude of observations, the two vessels arrived at the island of Maouna, one of the southern Archipelago. The impatient Lamanon, eager to assure himself of the truth of the published accounts of that country, debarked with Langle, the second in command. At the moment of their return, the natives, in hopes of booty, which had been excited by the number of presents that they had received, seized upon the boats, and attacked the party. The French were obliged to have recourse to arms for self-defence, and a desperate combat ensued. Lamanon, Langle, and ten of the two boats crews, fell a sacrifice to the fury of these barbarians.

Thus fell Lamanon, having acquired by his generous devotedness a sacred claim on the gratitude of the public. He was the only one of this celebrated though unfortunate expedition, who refused to avail himself of the national munificence; and he fell a victim to his love of science by a peculiar danger, to which no others of his learned associates were exposed.

Lamanon

Lamanon seemed born to bring about a revolution in science: the depth of his ideas, the energy of his character, the sagacity of his mind, united to that lively curiosity, that can draw instruction out of any thing, and leaves nothing unexplored, would have led him to the most valuable discoveries. In person he was tall, and to great vivacity and expression of feature added prodigious strength and activity; in a word, nature formed him with such care, as if she had intended him for one of those few, who are destined to great exploits. His style was nervous, often poetical, without losing sight of propriety, and the language of sentiment might frequently be discovered in the midst of strong and striking expressions; and if he wanted the exquisitely dazzling polish of diction, he was eminently gifted with the precision of logical reasoning, which commands attention and enforces persuasion.

Notwithstanding his constant employment, and the moderateness of his fortune, benevolence, the virtue of good and sensible men, had assumed that ascendancy in his mind, which the love of pleasure has in common men, and he found both opportunities and means of largely satisfying it: he was by no means insensible to the charms of society, though his ardour for study left him but little time to spend in this manner. So great was his ingenuousness, that an amiable woman having one day asked him whether he had no intimate female acquaintance, he replied, that he had always been infinitely desirous of
such

such a connexion, but had hitherto found no opportunity.

At the time of his engaging in the voyage round the world, it was that vivid and innate love of liberty, which always formed the basis of his character, that caused him to refuse the pecuniary compensation allowed to the other scientific men in the expedition; "If I do not feel satisfied," said he, "on board the vessel, if my inclination or curiosity lead me to wish to quit the ship, I should be unhappy if any power in the world had acquired the right of preventing me." Death has defeated the hopes of friendship, and has cut short the days of our friend * in a foreign and barbarous land, and even deprived us of the melancholy satisfaction of sprinkling his ashes with our tears, and strewing flowers on his grave.

* I also in my early youth was acquainted with Lamanon, at count de Gebelin's, and in some literary societies. His modesty, simplicity, and severe probity, had gained him the tender attachment of all his friends. Mongés the younger, a mineralogist, who also perished in the same fatal expedition; la Metherie, author of the *Theory of the Earth*, and editor of the *Journal de Physique*; citizen Ponce, a distinguished engraver and author of this eulogy; and Lewis Bosch, an active naturalist, at present in North America: these were his most intimate associates and friends: the latter, since the death of Lamanon, has placed the bust of his friend covered with black crape in a distinguished situation in his cabinet. (Note by citizen Millin.)

CHAPTER XXVII.

Dissertation on the inhabitants of Easter Island and Mowëe; by M. Rollin, M. D. Surgeon in ordinary of the Navy, and of the Frigate Bouffole, commanded by M. de la Pérouse, during his voyage round the world.

THE shortness of our stay at these islands having with difficulty allowed me to pass a few hours on shore, it was not possible to make inquiries with all the accuracy that might be wished, and to an extent sufficient to satisfy the instructions of the society of medicine. I must therefore confine myself, in the course of this memoir, to the correction of errors that have crept into the accounts of former navigators, and to a general sketch of the natives of these isles, and the common diseases to which they are subject.

On the 9th of April, 1786, we anchored at Easter Island, situate in $27^{\circ} 9'$ south latitude, and $111^{\circ} 55' 30''$ west longitude.

This island has by no means the barren and disgusting appearance ascribed to it by navigators; it is indeed nearly destitute of trees, but its shore and the vallies offer to the eye of the seaman at least a very pleasing covering of verdure. The size and excellence

cellence of its potatoes, yams, and sugar-canes, announce the fertility of the soil.

Errors as great have been entertained concerning its inhabitants; we do not find either the giants of Roggewein, or the half-starved pining wretches described by a modern navigator, who has characterized them by a misery that has no existence. Far from finding men worn down by penury, and a small proportion of women, who have with difficulty escaped being buried under the ruins of a supposed revolution in that part of the world; I found, on the contrary, a considerable population, more liberally endowed with grace and beauty, than any which I afterwards met with; and a soil which, with very little trouble, furnished excellent provision beyond the supply of their wants; though fresh water was difficult to be met with, and of a very indifferent quality.

These islanders are a stout, handsome, well made race of people, about five feet nine inches high. The colour of the face is not remarkably different from that of Europeans. They have but little hair on the chin and the rest of the body, except on the parts of sex, and beneath the armpits. The colour of the skin is tawny, and the hair black; sometimes, however, it occurs of a lighter shade. They appear in general to enjoy good health even in advanced age. They are accustomed to paint and tattoo the skin, and bore the ears, through which they insert a sugar cane leaf rolled up in a spiral form, so as at length

length to cause the lobe of the ear to rest on the shoulders; a practice which, among the men at least, is esteemed a great beauty.

The women to a regular shape unite much grace of form; they have an agreeable oval face, and great mildness and intelligence in their features; they only want a mixture of the rose in their complexions to make them handsome, according to European ideas of beauty: their fine hair, their rounded limbs, their engaging appearance, are well calculated to inspire sentiments, which they feel without being under the necessity of concealment.

Notwithstanding these interesting qualities, the men appear to entertain no jealous sentiments; on the contrary, they sought for opportunities of selling their favours. These people are circumcised, and seem to live in pure anarchy, without any chief. Both men and women are almost naked, no part of the body except the parts of sex being concealed; some of them indeed wear a piece of cloth round their shoulders or hips, which reaches as low as their mid thigh.

I know not what are their ideas among themselves of the sacredness of property, but their conduct towards us evinces the little regard which they have for that of strangers; they took such a liking to our hats, that in a very few hours they robbed us of them, and then laughed at us like mischievous school-boys.

These

These people are not without industry; their cottages are of a good size and neatly built; they are constructed of frame-work filled up with reeds; their shape is that of a reversed cradle, being about fifty feet long, twelve wide, and twelve high in the centre. There are several doors on the sides, the widest of which does not exceed three feet. The inside offers nothing remarkable, containing only some mats which they spread on the ground by way of beds, and a few other household utensils. Their cloth is made of the paper mulberry; it is, however, by no means common, on account of the scarcity of these trees, though they appear to be cultivated with some care. They make also hats and baskets of rushes, and carve in wood tolerably well. Their food consists of potatoes, bananas, yams, sugar canes, fish, and a kind of sea weed, or fucus, which they find in plenty on the shore.

Fowls, though in small number, constitute their only domestic animals, and rats are the only wild quadrupeds on the island. There are but a few sea birds, and not many fish on the coast.

In the eastern part of the island is a large crater, round which, on the sea shore, are several rude statues, or rather busts, with only the eyes, nose, mouth, and ears, coarsely executed. At the foot of these statues are those mysterious caverns mentioned by captain Cook, which serve as vaults in which the dead

dead of each family are deposited. We inspected them without the smallest opposition from the natives.

La Pérouse, in addition to the presents that he had already made to these islanders, was desirous of giving them fresh proofs of his kindness, and of contributing essentially and lastingly to their welfare; he therefore left on their island two ewes, a she-goat, and sow, with a male of each species, and sowed various kinds of pulse, as well as peach, plum, and cherry stones, and pips of oranges and lemons.

If the future conduct of the natives do not render ineffectual these valuable gifts, this celebrated navigator will enjoy the glory of having materially consulted their welfare, by peopling their island with animals and vegetables fit for food, and the supply of their other most urgent wants, and of having assured to succeeding navigators every kind of refreshment.

These benevolent intentions being put in execution, we got under way, and directed our course towards the Sandwich islands. As soon as we came in sight of Mowee, one of this cluster, near two hundred canoes put off to meet us loaden with hogs, fruits, and fresh vegetables, which the inhabitants threw on board, and obliged us to accept without any recompence. The wind having freshened, and thus accelerated our course, we could only partially avail ourselves of these resources, and enjoy but for a short

time the agreeable and picturesque view of this island, and the assembled multitude of canoes, the skilful manœuvres of which formed the most animating and entertaining spectacle that can be imagined. On the 29th of May we anchored to the west of this island, situate in lat. $20^{\circ} 34' 30''$ and $158^{\circ} 25'$ west longitude. The vegetation of this part of Mowee is not nearly so vigorous, or is the population so considerable, as on the eastern side, which we had just touched upon; however we had scarcely cast anchor, before we were surrounded by the inhabitants, bringing us in their canoes hogs, fruits, and fresh vegetables. We commenced our barter with such success, that for a few pieces of iron we had in a few hours on board nearly 300 hogs, and an ample stock of vegetables. The mutual good faith observed on both sides in this traffic can be equalled, I believe, in very few European markets. Notwithstanding the abundance of animal and vegetable food, that this island furnishes to its inhabitants, yet with regard to health, elegance of form, and beauty of person, they are much inferior to the natives of Easter Isle, who are far more scantily provided with the necessaries of life. The inhabitants, however, of Mowee appear to have some analogy of conformation with those of Easter Isle, and even to be of a more robust make, if their health had not suffered from disorders. The common height of these people is about five feet eight inches; they are
of

of a spare habit of body, with large features; they have thick eyebrows, dark eyes, a confident, though not forbidding air, high cheek bones, wide nostrils, thick lips, a wide mouth, rather large but handsome and even teeth; we saw a few persons who had lost one or more of them; and it is the opinion of a modern navigator, that they manifest in this way their grief for the loss of their relations or friends. During our continuance among them we observed nothing to confirm or invalidate this idea.

These people have more strongly expressed muscles, more bushy beards, and the parts of sex better furnished with hair, than the natives of Easter Island. Their hair is black, which they cut into the figure of a helmet: one lock, representing the crest of the helmet, they suffer to grow to its full length, tinging the ends of it red, probably by means of some vegetable acid. The women are shorter than the men, and are destitute of the gaiety, the mildness, and elegance of form which distinguish those of Easter Island. They are in general ill-shaped, large featured, have a melancholy air, and are gross, sluggish, and awkward in their manners. The inhabitants of Mowee, on the contrary, are mild, attentive, and have a degree of politeness towards strangers.

These people paint and tattoo the skin, bore the ears and the cartilage of the nose, in which they wear rings by way of ornament. They are uncircumcised, but some among them have a kind of

infibulation, withdrawing the prepuce behind the glans, and fixing it there by a ligature. Their dress consists of an apron across the waist, and a piece of cloth wrapped round the body. The stuffs made by these islanders of the bark of the paper mulberry are elegant, and of various constructions. They paint them with much taste, and their drawings are so regular as nearly to equal those of our pattern-drawers. Their houses, formed into villages, are square, and built of the same materials as those of Easter Island. The inhabitants of Mowee appear to be divided into several tribes, each of which is governed by a chief.

The beauty of the climate and the fertility of the soil would render the inhabitants very happy, if they were less generally and violently affected with lues venerea and leprosy. These most destructive and humiliating scourges of the human race are characterized among these islanders by the following symptoms, namely, buboes, which suppurating, leave cicatrices, with loss of substance, warts, spreading ulcers with caries of the bones, nodes, exostoses, fistulæ, and tumours of the lachrymal and salivary ducts, scrofulous swellings, inveterate ophthalmiæ, ichorous ulcerations of the tunica conjunctiva, wasting of the eyes, blindness, inflamed itching herpetic eruptions, and indolent swellings of the extremities, and among children scald head, or a malignant tinea, from which exudes a fetid and corrosive

rosive sanies. I have observed, that the greater part of these unhappy victims of frailty, when arrived at the age of nine or ten, were feeble, languid, liable to marasmus and rickets.

The indolent swelling of the extremities, which we observed among the islanders of Mowee, and which Anderson, surgeon to captain Cook, has also remarked among the greater number of the inhabitants of the South Sea, is nothing else than a symptom of an advanced state of elephantiasis, as I assured myself as much as possible in many examinations which I made on a great number of lepers in the hospitals of Madeira and Manilla. In this period of the disease the skin has already lost its sensibility: and if the activity of the virus be not checked by a suitable regimen and medical treatment, the swollen limbs soon entirely lose their irritability and sensibility; the skin becomes scaly, and phlyctænæ are formed filled with a fetid and corrosive sanies, and very liable to degenerate into gangrenous or carcinomatous ulcers. The quality of their food may concur with the heat of the climate, to keep up and propagate this disease of the adipose membrane; the hogs themselves, whose flesh forms so great a part of the food of the inhabitants of Mowee, are many of them very measly; I examined several whose skin was scabby and full of pimples, and entirely deprived of hair: in opening these animals I found the caul sprinkled with

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tubercles,

tubercles, and the viscera covered with them, so as to turn the least delicate stomach. Among the diseases which so deplorably afflict these islanders, some of them appear to be produced by the venereal virus in all its activity, but more commonly it appears under a degenerated form, or combined with pfora.

The shortness of our stay, and other circumstances, did not allow me to make any inquiry into the mode of cure practised by these people; but judging from their hopeless resignation, and the progress of their disorder, I am of opinion, that they are ignorant of any means of even alleviating their miserable situation.

Has the lues venerea been communicated to the Sandwich Isles by the crews of captain Cook's ships? The advanced state of the disorder, and the numbers that were found affected by it at Mowee, when the English navigator touched there, nine months and a half after his first communication with the natives of Atooi and Oneeheow, joined to the malconformation so remarkable in individuals of every age, may, if not demonstrate, at least induce us to believe, that the venereal disease existed in these isles before the discovery of them by captain Cook. The proofs of this may even be taken from his own representation. On his arrival off Mowee, he communicated with several of the natives, who went to meet him

some leagues from the shore in their canoes laden with fresh provision : after mentioning this, he adds, “ I was desirous of preserving this island from the venereal disease, by prohibiting our sailors from having any connexion with the women of the country : but I soon perceived that it already existed there ; a circumstance that I can only account for upon the supposition of these islanders having had communication with their neighbours.”

This was the most simple and obvious explanation, but it does not account for the possibility of the fact. For though the isles of Atooi and Oneehow are separated from Mowee only by channels a few leagues across, it does not follow, that the communication between them should be so intimate as to cause a general prevalence of the venereal disease among the inhabitants of Mowee. Besides, from captain Cook’s narrative it appears, that these different tribes are rarely upon good terms with each other ; a circumstance very adverse to frequent communication. Besides, how is it possible to reconcile with this the conduct of the people of Mowee towards the English on their appearance off the island ? If the natives were suffering severely from the landing of these strangers on the territory of their neighbours, would they have so eagerly administered to their wants, instead of manifesting a reserve and apprehension of them ? Besides, it seems to me that it is impossible to explain

plain the rapid advance of the contagion, without having recourse to the supposition, that the lues, like epidemic disorders, is propagated by a peculiar constitution of the atmosphere, a hypothesis that the experience of medical men has long since exploded; the disorder being certainly produced, not by unwholesome food, bad air, or spontaneous corruption of the humours, but solely by the immediate contact of an infected person.

From these considerations I am induced to believe, that the venereal disease existed in the Sandwich Islands previous to the arrival of captain Cook, and that it either was indigenous, or had been brought thither by former navigators.

Considerable light might be thrown on the origin of lues in this archipelago, by historical and geographical researches; but I wave this discussion, as foreign to the object of the present memoir*.

* After referring the reader to the notes of the preceding vol. p. 52, 53. I cannot avoid observing how injurious the spirit of systematizing is, and how it overlooks every argument that opposes a favourite theory. The favourable reception of captain Cook at Mowee might be owing to its inhabitants being ignorant, that the cruel disease, under which they were suffering from communication with their neighbours, originated from his ship; not to mention, that the recollection and desire of enjoyment readily induces the forgiveness of these evils. Was La Pérouse, on his arrival some years after at the Sandwich Islands, by the inhabitants of which he might readily be confounded with the English, exposed to the least symptom
of

of resentment? On the contrary, he assures us, that the advances of the women testified their inclination to a renewal of connexion with strangers. The eagerness of the inhabitants in supplying the ships with fresh provision, by no means tends to the proof of M. Rollin's supposition, for they would find an irresistible inducement to traffic in the glittering attraction of European toys, or the more important acquisition of iron tools. The rapid communication of the disease will be no longer a matter of wonder, when we consider, that these people are ignorant of the conjugal tie, and even acknowledge no exclusive property in their women.

It is therefore my opinion, that the ancient or modern discoverers of the South Sea Islands introduced there the venereal disease, as it was in like manner communicated to the continent of America; for I am not of the opinion of those, who attribute to it a trans-atlantic origin, being persuaded, that the oldest records of its existence are to be found in Europe. But even if it should in reality have been brought from the Antilles, or Domingo, or Cuba, let us not be so unjust, as to regret the discovery of the new world, on account of a disorder capable of being cured, and which appears to be gradually wearing itself out; forgetting that we are indebted to it for the cinchona, the ipecacuanha, the gum copal, the simarouba, cochineal, cocoa, guaiacum, maize, &c. and the idea of some of our most useful establishments, such as public posts, and military hospitals, not to mention the assistance that the arts have hence derived; whereas the native Americans have little or nothing of European origin to counterbalance the desolation of the small-pox, for which they are indebted to their conquerors.—(*Fr. Edit.*)

GEOGRAPHICAL MEMOIR.

BY

M. Bernizet, Geographical Engineer.

EASTER ISLAND.

ON the 8th of April 1786, at half past six in the evening, being to the east of Easter Island, the land appeared very distinctly as represented in View I. of the plate; the summit A, and all the descents from it, were very clearly defined; the two extremities broke off very abruptly, being nearly perpendicular; the slope A H was interrupted from H to about its middle, by three small summits; the slope A I, on the contrary, had a very easy outline, composed of two saliant and three entering angles.

The land stretching to the north-west of this first was much more indistinct, and its extremity scarcely visible through the fog; the summit K of its highest bluff was not above two-thirds of the height of the peak A. This summit was almost perpendicular at the northern extremity of the declivity H. But towards the north it descended more gradually, consisting of three entering and two saliant

salient angles: to the south a ridge indistinctly marked joined this land to the former, about the middle of its height; its length was three-fourths of the distance between H and I.

The land stretching to south-west of the point I did not exceed one half of the total height, or was its length more than half of the space included between I and H: its regularity was broken by three small steep bluffs, and another much lower than the rest, descending gradually on the south towards the sea. The fog with which it was covered did not allow me to fix its bearings, and for the same reason I was unable to ascertain the exact size of the angle formed by the island.

The summit was to westward 4° south, at the distance of four leagues.

The point I bore west by south one degree west.

And the most northerly Cape bore west $1^{\circ} 30'$ north.

On the 9th, at 27 minutes past 6 in the morning, the land appeared as in view II. The centre of the Isle L appeared even and of the same height as the peak A mentioned above, and which belongs to the eastermost bluff. To the south-west of this we perceived two paps B, the rapid and bare descent of which appeared covered with whitish rocks; the land, which to the east was high and peaked, was sensibly depressed, and became almost level, between

tween the two bluffs; its elevation was then very little, and continued unvaried for about a quarter of a league, except a small hillock M, flat at the top, and terminating abruptly to the west: the paps appeared but a little way from the sea-shore, and the coast stretched away a little to the east. Two bluffs C and D, in the second distance, joined by a gentle and elongated declivity the paps with the centre of the island. These bluffs seemed to have crater-like summits: the first C was the smallest, and apparently the nearest; in front of it was a little hill, and behind it a stretch of high land at a greater distance than the rest, with two well defined summits, connected behind the paps to the low land just mentioned.

The centre of the isle appeared in the third distance, and its declivity to the sea-shore was only interrupted by a small hillock very similar to that before the bluff C. The summit of the bluff E appeared crater-formed, and much nearer the water's-edge. The irregularities of its descent were very visible, and two intermediate bluffs of no great height united it to the centre L, from which it appeared distant in a south-westerly direction as it was in the north-easterly one from the bluff G. This last, which was nearly the height of D, was rather lower and more peaked than another on which it abutted to the north-east. The bluff N, which immediately succeeded, was also a little higher. Its base was large and its north-eastern declivity descended

scended a little more than its south-western. This last connected itself with that at the extremity of the island, which is also nearly as high as the centre L, and terminates perpendicularly. There was also visible to the west of this point, a rock of an obelisk-shape, and a little further to sea, a small islet, the lowness of which had hindered it from being sooner discovered.

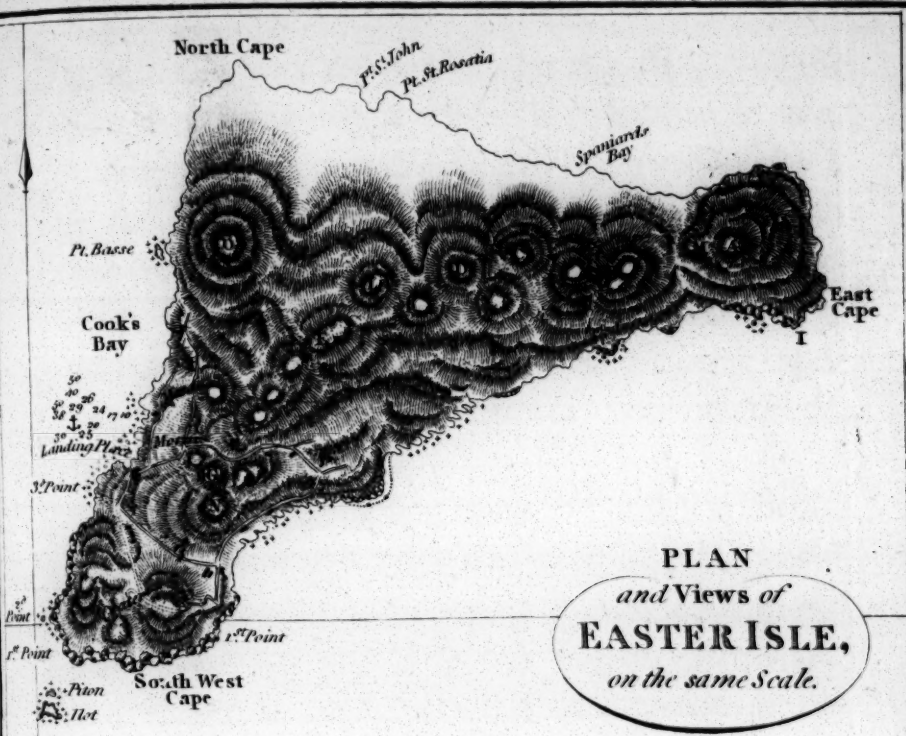
At 32 minutes after 10, the land appeared as in the third view. The western extremity of the islet concealed the base of the obelisk rock: the coast, which in the south-east quarter was very high, rugged, and peaked, offered to the sight a large and deep entering angle, almost perpendicular to the eastern extremity of the same island. This angle a little before resembled a large gash, which, to our surprise, terminated before it reached the shore. Behind it, and in the second distance, was seen a continued indented ridge, the steep and rugged sides of which appeared to be concave: its centre retired from the eye as its two extremities approached it, converging towards the summits of point 2, and the south-west cape. Those of this last were almost horizontal; the other, on the contrary, gradually descended by very irregular escarpements. Its base stretched three quarters of a league to the north-north-east as far as point 3, which is the southernmost of Cook's Bay, behind which is the landing-place. We were a little more than two leagues

leagues distant to the south-south-west of point 3, when we discovered north eighteen degrees east a low point, before which is a small islet still lower, and which at this distance appeared united to it at its eastern extremity. This is the northernmost point of Cook's Bay: it was about three leagues off, and rose gently towards the east, as far as the summit O, whence a perpendicular let fall to the water's-edge would have cut point 3 to the east, at a small distance from its extremity.

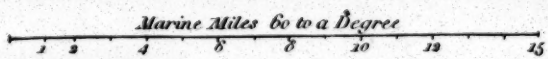
This summit appeared in the third distance, advancing a little towards the eye as it sunk to the south-east. It joined the low lands half way down between point 3 and point 2.

The paps B, more clearly defined than the land in the neighbourhood of the summit O, appeared on the same level, though they were considerably further off. They began to be concealed by the eastern extremity of the south-west cape, point 1, above which we saw the summit A a little to the east, mentioned before in views 1 and 2, the whole course of the declivity of which was interrupted only by a very small bluff between it and the east point.

The chart of Easter Island was constructed from these observations, and the tour that we made into the interior of the country. Each of the principal points was ascertained by several operations, whence it appears, that the direction of this island is nearly east-north-east and west-south-west in its longest dimensions,



PLAN
and Views of
EASTER ISLE,
on the same Scale.



The Letters A.B.C. &c. refer to the same
Objects in the Plan and in the Views.



A. W. 4° S. distant 4 Leagues; L. W. 4 S. W. 1° W. North Cape W. 1° 30' N.



East Cape N. distant 2 Leagues; South West Cape W. by 5° N.



East Cape N. by 54° 30' E. P. Baese N. by 18° 30' E. Small P. N. by 30° E. dist. 1 League.



North Cape S. 15° East. — distant 13 Leagues; A S. 25° E. South West Cape S. 9° East.

4 AP 54

sions, taken from the middle of the eastern cape to the western extremity of the south-west cape. A line to unite these two points would pass over the land by the south-east coast, it would be rather more than four leagues in length, and parallel to one which should join the most southern land of the east cape to the most southern of the west cape. The interval between these two lines would be nearly half a league.

The line which passing along the west side should join the westernmost to the northernmost point would be in a direction north-north-east, and south-south-west; its length would be two leagues three quarters, it would cut Cook's Bay, and pass over the land only from the northern extremity of that bay.

A third line from the northern point to the centre of the eastern cape would pass along the third or northern side of the isle: the two most considerable points that it would cut would be Gonzalez Bay, where the Spaniards anchored in October 1770, and the most northern land of the east cape. The direction of this line would be east by south five degrees south, and west by north five degrees north; its length two leagues three quarters.

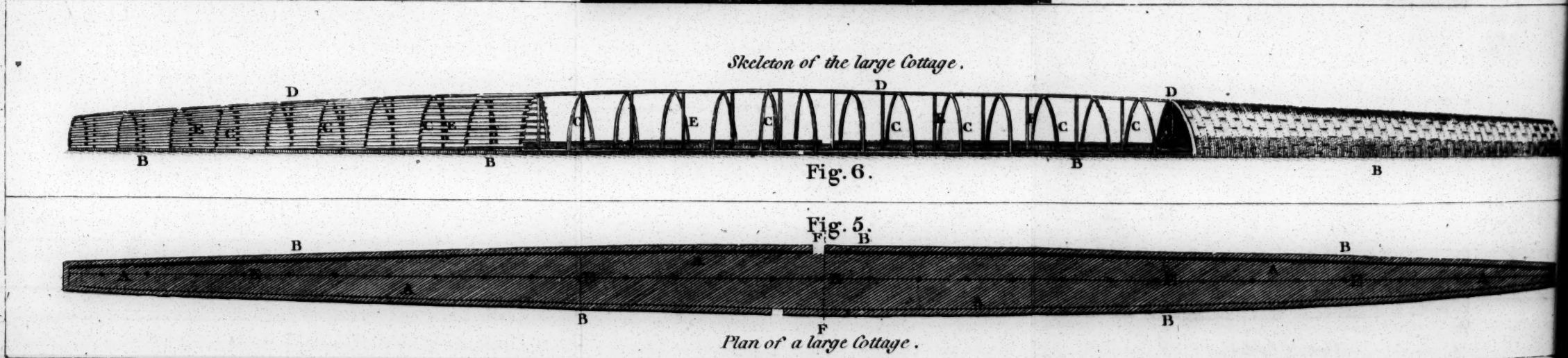
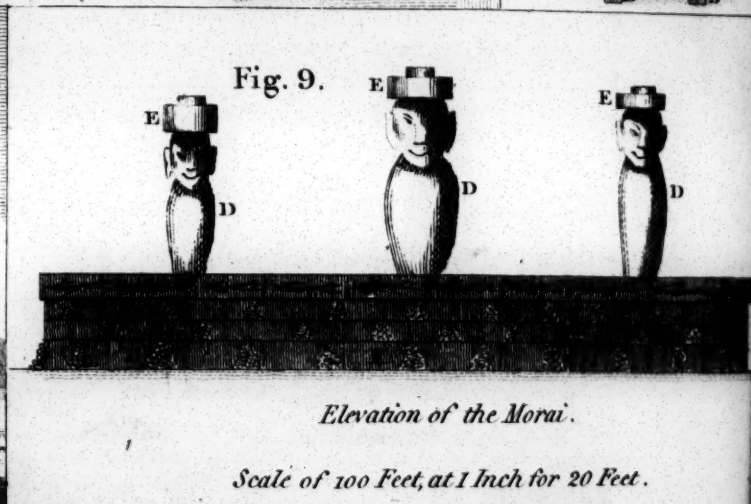
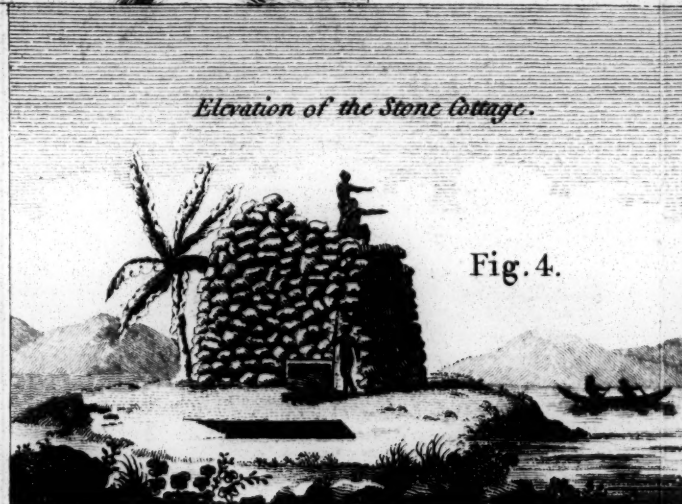
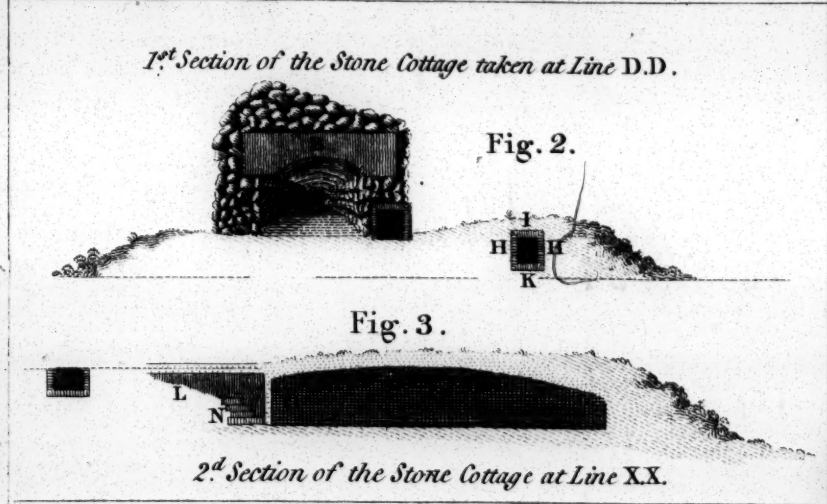
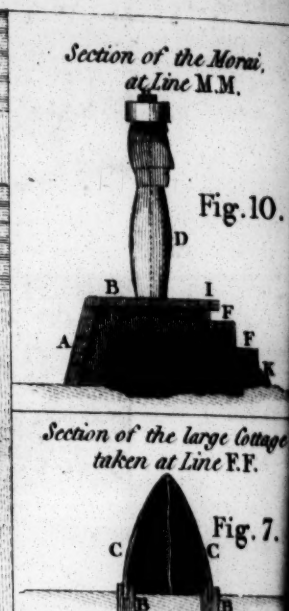
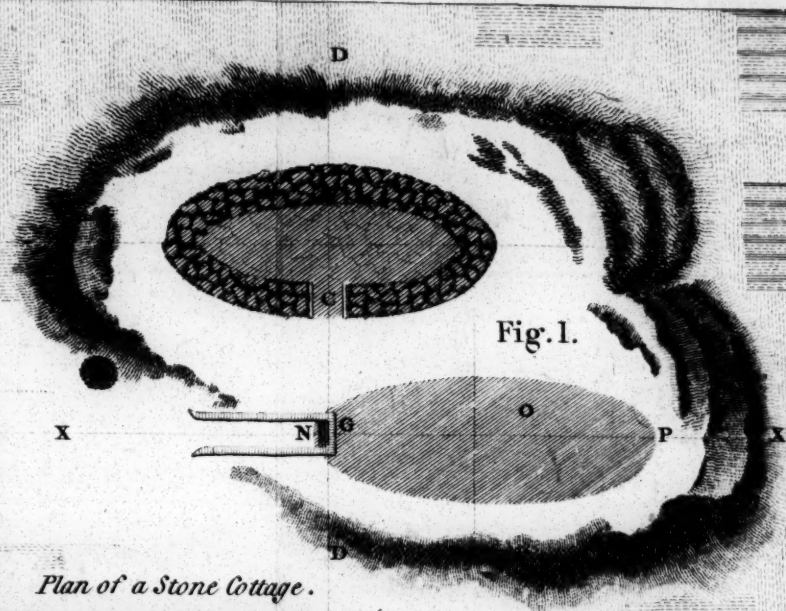
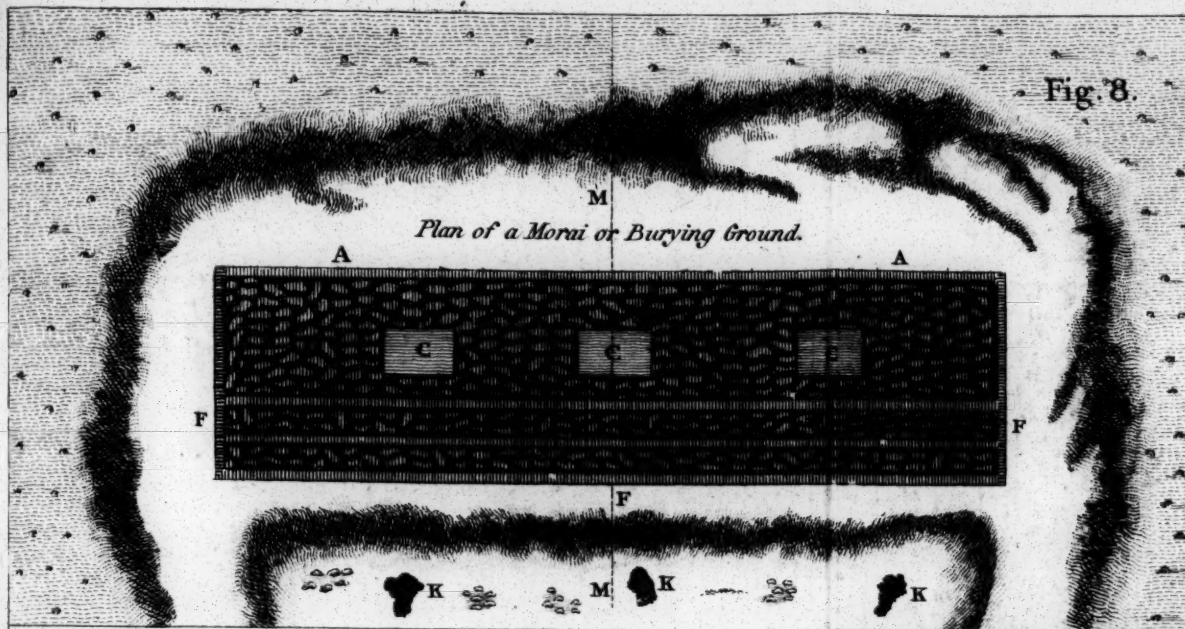
Hence it appears, that the form of this island is an isosceles triangle, the longest side of which, the south-eastern, is rather more than four leagues: the quantity of each of the angles of the base is 41 degrees, and of
that

that opposite to the base 98 degrees, and the length of the northern and western sides is two leagues three quarters.

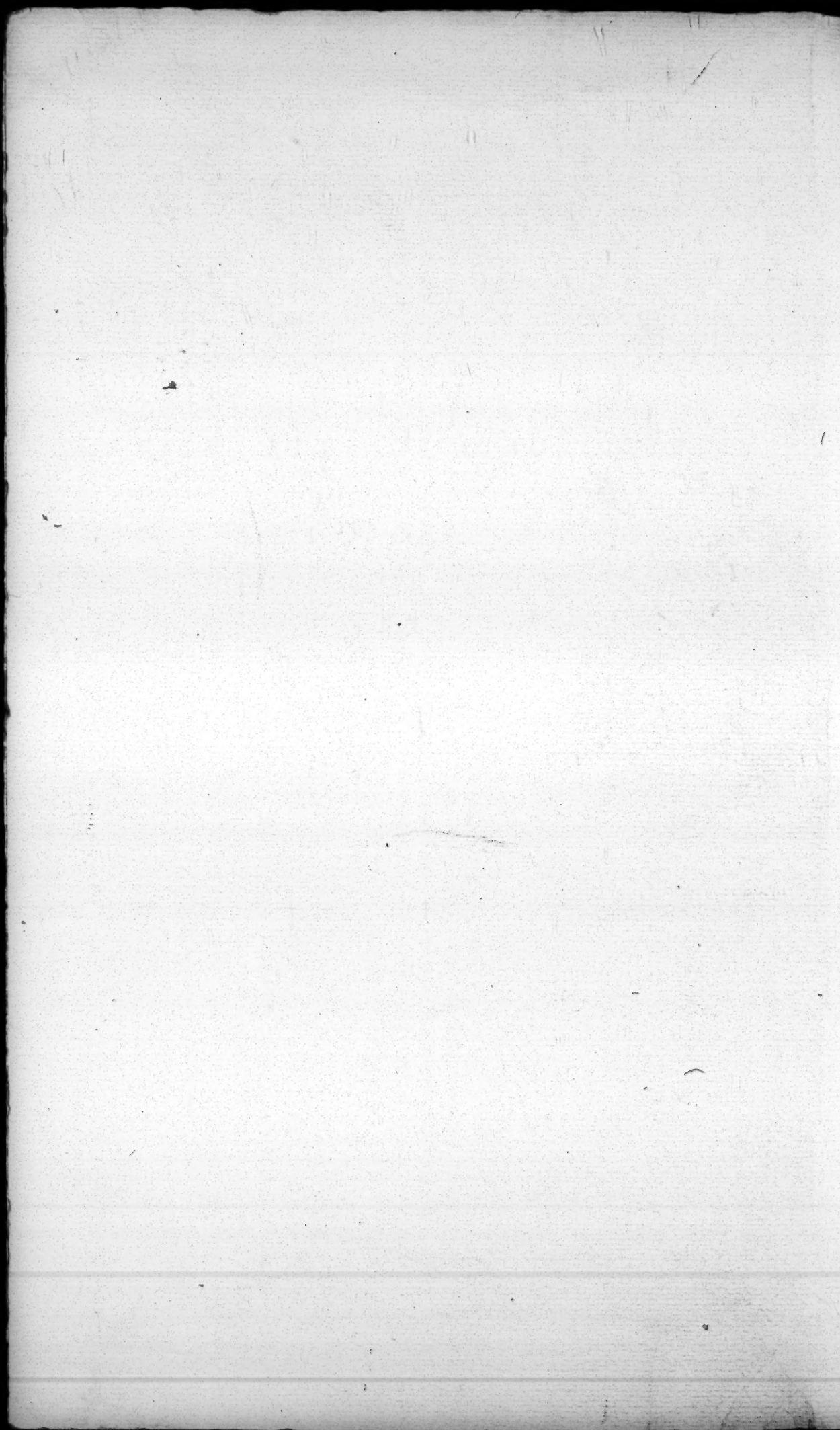
From these data it would be easy to determine its surface, if a source of error did not originate from the superior size of the capes and advanced points to the creeks, bays, and other indentations, as they would give an extent of 30,870,671 square toises, instead of 34,935,319, or thereabouts, which is the amount of the true surface. There is a difference between these sums of 4,064,648 toises, nearly $\frac{5}{7}$ of a square league; the whole surface therefore contains about four square leagues and one-fifth.

The depth in Cook's Bay varies from ten fathoms, coral bottom, within 200 toises of the shore to fifty fathoms, gravelly bottom, at the distance of half a league to the west of Sandy Creek. The depth increases very rapidly, and the only anchoring ground is a small space around the station of our frigates; for further out to sea the depth is too considerable, and nearer the shore the cables are liable to injury from the coral rocks, beside the danger of being blown ashore by the westerly winds; the wind, however, rarely blows from this quarter, and never with so much violence as to prevent a vessel from plying to the northward.

From the Spanish chart of this island it appears, that nearly the same depth of water is to be met with along
its



Geometrical Draughts of the Monuments &c. in Easter-Island.



its circuit. The whole of the north coast in our chart has been copied from the Spanish one, for it was left unvisited by us. The Spaniards anchored there on the open shore, and in a foul bottom, with the wind on the land; so that there is no reason to prefer it to Cook's Bay.

The particular plan of this bay was laid down only from a single operation, by estimating at each observation the distance between points already ascertained. As to its topography, it is less striking, because the descent of the different bluffs is very gradual and even: it would, however, be difficult to gain their tops on account of the immense quantity of loose stones with which they are overspread, and which render even the whole island hardly accessible, but by the paths which cross it in every direction. The breadth of these paths does not extend a foot and a half; they are very firm, and wholly cleared from stones; they lead chiefly to the cottages and burying-places or Morais. Some of the cottages are constructed of rough stone represented in plate 12, fig. 1. Their form is that of an ellipsoid, the walls A, are very thick; the roof B, fig. 2. is composed of great stones, a little arched on the inner surface and resting by both ends on the top of the walls; a small opening C, formed in one of the extremities of the short axis D, serves both for window and door; it will only admit a single person at a time creeping on hands and knees.

The

The walls on the inside are perfectly bare, and there is no division of apartments.

	Feet.
Length of the long axis - - -	24
—— of the short axis - - -	6
Height of the centre - - -	7
Ditto —— at the top of the ellipse - -	4
Thickness of the walls - - -	4
Height of the door - - -	2
Width —— ditto - - -	2

At the distance of ten feet from the door, in the line of the short axis, is a door G, the top of which is sunk below the level of the ground; the *uprights* H, the *cross bar* I, and the *threshold* K, fig. 2, are formed of squared stone put together without any cement. The descent to it is by an even floor L, fig. 3, at the sides of which is a perpendicular wall, to prevent the falling in of the earth, built of stones about 2 feet 10 inches long, 2 feet broad and 10 inches thick. Four steps N, also of squared stone, lead from the sloping floor to the entrance of a cave or cellar O, cut out of the rock; the form and size of which are very similar to that of the cottage above ground, except that it is truncated at one of the summits P, of the ellipse of the base.

In the construction of their subterraneous cells the natives have often taken advantage of the natural caverns that abound in the lava; whence it happens that several of them are very irregular, and at a dis-

tance from their cottages; but as often as, with their inadequate tools, the inhabitants have been able to overcome the natural irregularities, they have brought them to a regular shape of the following dimensions.

	Feet.	Inches.
Depth of the cave or length of the greatest axis	30	—
Breadth of the middle	11	—
Height of the centre	5	6
Breadth of the door	2	—
Height of ditto	3	—

It is in these subterraneous caves that the islanders store up their food, their tools, their wood, and in general what little property they possess.

At a little distance from the cottage and cave is a round hole dug in the earth, lined and floored with rough stone, serving for an oven; its diameter is three feet, its depth two feet.

It may also be remarked, as is expressed in the elevation, fig. 4, that the north-east side of the cottages, being the part most exposed to the wind, is considerably higher than the rest, and the top of the cottage, which serves as a terrace, is by this means in a great measure protected from wind and driving rain.

The same structure is made use of in the other cottages that are situated among their plantations: their form is that of an elongated ellipse, A, fig. 5, being very narrow in proportion to their length; the foundations B, are formed of squared stones sunk in the ground, about two feet long and six inches thick, with holes at regular intervals, in which are

fixed stakes, C, fig. 6, that serve to support cross bars, D, which are still further strengthened by uprights, E, driven into the ground, at the distance of ten feet from each other; the upright beams are connected together from top to bottom by cross bars, two feet distant from each other. The highest part of the building is the centre, a section through which perpendicular to the long axis of the ellipse, would describe the figure of a demi-ellipse, (see the plan, skeleton of the building, and vertical section, fig. 5, 6, and 7.) The covering consists of rushmats fastened together by small cord plaited by hand. The two doors, of which there is one at each side, are not larger than those of the common cabins, and the baking hearth like those mentioned above, is palisaded on the windward side.

	Feet.
Length of the axis of the ellipse - - -	310
Breadth of the centre - - -	10
Height of ditto - - -	10
Ditto at the extremities - - -	4
Breadth at ditto - - -	3

The form of these larger buildings is not however invariable, for some at the centre, either from the plan or elevation, are more arched than the curvature of the ellipse.

The small cottages are scarcely capable of holding six persons; some of them have at the entrance a kind of portico.

There are also hollowed rocks, under which the islanders

islanders find a shelter; the floor of these retreats is covered with rushes, but they are entirely exposed to the open air, and appear to be their summer habitations.

The burying places or morais, (fig. 8, 9, 10,) are of a more remarkable structure; their dimensions are very various, but their form is invariably the same. On an horizontal base is erected a sloping wall A, made of cut stone; this wall is more or less high according to the slope of the base on which it stands: its summit is terminated by an horizontal platform B, made of rough stones, into which are let rectangular pieces of hard stone C, which serve as the base to those almost shapeless masses D, that represent busts. These figures, as may be seen in the plate, are surmounted by a cylindrical capital E, a little hollowed in its lower end to receive the head of the bust. It is composed of red lava, very porous and light. Two steps F, below the platform, made in the same manner, and edged with the same kind of stone, lead by a gentle slope to a terrace which is bordered by a kind of parapet made of the earth, dug away in order to level the terrace. There are some steps which have a plinth I, on their upper part, running along the whole length, on which are represented recumbent skeletons, and not far from the lower step are entrances K, or narrow trenches that lead into a cavern L, in which are found several human bones: the form of this cavern

is irregular, and its size does not appear at all to depend on the proportions of the morai.

	Feet.	Inc.
Height of the wall - - - - -	8	0
*Length of the platform - - - - -	80	0
Breadth of Do. - - - - -	12	0
Height of the steps - - - - -	2	0
Breadth of Do. - - - - -	3	0
†Length of the terrace - - - - -	384	0
Breadth of Do. - - - - -	324	0
Height of one of the large busts - - - - -	14	6
Do. from the base to below the chin - - - - -	9	6
Height from the chin to the top of the head - - - - -	5	0
Do. to below the nose - - - - -	1	6
Length of the nose - - - - -	1	8
Projection of Do. - - - - -	0	10
Breadth of the lower part of Do. - - - - -	1	2
Length of the ears - - - - -	2	0
Long diameter of the orbit - - - - -	1	0
Do. of the eye - - - - -	1	0
Short diameter of Do. - - - - -	0	10
Breadth of the base - - - - -	6	0
Do. at the ears - - - - -	5	3
Do. at the shoulders - - - - -	7	6
Do. at the neck - - - - -	4	6
Thickness of Do. - - - - -	3	0
Do. of the belly - - - - -	3	6
Height of the capital - - - - -	3	1
Diameter of Do. - - - - -	4	9

These measures are those of one particular monument, for there is an infinite variety in these dimensions. It may be remarked, that though the greater part of the stones made use of in this

* We saw one of these 267 feet long.

† The dimensions are for the most part inferior to those given above.

building

building are well squared, there are several that are rather convex, which seems to prove, that they were not cut, but ground into shape; and the exact parallelism of the greater number does not invalidate this assertion, as it may depend on the greater or less skill of the artist. As to the difficulty of transporting and erecting these without any mechanical assistance, this will disappear by reflecting, that by the assistance of arms, cords, two levers, and three wooden rollers, it is easy to transport and raise the most enormous masses.

Their plantations are very numerous; their fields, planted with potatoes and yams, are all of a rectangular shape; they are without either hedge or fence of any kind, as well as the plantations of the paper-mulberry. The banana trees are arranged in a quincunx order, and very carefully attended to. The sea coast is very steep, containing but few landing places. It is singular that there is no brook, the water losing itself among the large stones that cover the surface of the whole island. The only fresh water to be had, and that of a very inferior quality, is contained in a few inconsiderable excavations towards the summit of the rocks. Trees are very scarce, we did not even see a single one worthy of the name.

On the 10th of April, at nine in the morning, being about 13 leagues from the island, it appeared as in view IV. The centre of the isle, together with

the summit of the north cape, though misty, was yet sufficiently clear to allow us to distinguish its escarpments; it joined to the sea on its western side by an even gradual slope; its eastern side was also very regular, and longer than the former. The two heights called by the Spaniards San Juan and Santa Rosalia, rose above the extremity of the cape, and appeared before it; the vallies were obscured from the view. The summit A of the east cape, appearing separated from the rest, seemed to be another island; its height was the half of the middle summit: the interval between the two was equal to the base of the main land; the base of the east cape appeared only a quarter of the dimensions of the former.

The cape of the south-west was still visible in the west, but was very low and indistinct; its form was nearly flat, and its distance from the centre of the island was only the half of the base of this latter.

The bearing of the summit of the isle was south 15 degrees east.

That of the summit A of the east cape, south 25 degrees east.

And that of the south-west cape, south 9 degrees east.

On board the Bouffole, April 18, 1786.

(Signed)

BERNIZET.

PHYSIO-

PHYSIOLOGICAL AND PATHOLOGICAL
M E M O I R

CONCERNING THE NATIVES OF AMERICA,

*By M. Rollin, M. D. Surgeon Major of the Frigate
la Bouffole.*

OWING to a number of unforeseen circumstances, I was not made acquainted with the instructive memoir transmitted to M. De La Pérouse by the society of medicine till the completion of the following dissertation; if therefore the proposed object should not be entirely attained, these observations, such as they are, will, I hope, be received with indulgence.

Of the Natives of Chili.

The structure of the body among these people offers nothing extraordinary: they are in general of a lower stature and less robust than Frenchmen; nevertheless they endure with great courage the fatigues of war, and all its attendant privations. They have in several instances impeded the progress of the Spanish arms, and sometimes even been victorious; their history abounds with so many instances of bravery, as to have won for them, even from the

proudest Spaniards, the honourable title of *Indios bravos*; nor have their present descendants lost the animating remembrance of the deeds of their ancestors.

There is a great sameness in the physiognomy of most of the individuals of this nation: the face is larger and rounder than that of Europeans; the features are more strongly marked; the eyes are small, dull, black, and deep seated; the forehead is low, the eyebrows black and shaggy; the nose short and flattened, the cheek-bones high, the lips thick, the mouth wide, and the chin diminutive.


The women are short, ill made, and with disgusting countenances; in no instance did I observe that mildness of features, and elegance of form, which usually characterize the sex.

Both men and women bore their ears and nose, which they adorn with glass or mother of pearl trinkets. The colour of their skin is a reddish brown, that of their nails is similar but not so deep. The hair of both is black, coarse, and very thick; the men have but little beard, but their armpits and parts of sex are well furnished with hair, which parts in most of the women have none.

Of the Natives of California.

These people live in the northern hemisphere, about the same distance from the line as the Chilians in the south.

During



During my stay at Monterey I had an opportunity of examining several of both sexes, and I observed very little resemblance between them and the Chilians. The men are much taller, and of a more robust make, but inferior in courage and sense to those of Chili. They have a low forehead, black and thick eyebrows, dark deep seated eyes, short nose depressed at the root, high cheek bones, a rather large mouth, thick lips, and very fine teeth. They are destitute of industry and curiosity, being extremely indolent and very stupid: they turn their toes inwards in walking, and their timid carriage at first sight announces their pusillanimous character.

The women of California also differ in several particulars from those of Chili: they are taller, better limbed, and mostly of less disgusting features. The hair of the head is very similar in both nations; but the Californians are better bearded than the Chilians, and the parts of sex better clothed: however, I remarked among the men a great number of individuals entirely beardless; the women also have little hair under the armpits and on the parts of sex: these peculiarities, however, I was informed, are only artificial, the hair being eradicated by scraping with shells, or plucking up by means of a cleft stick.

These people paint the skin by way of ornament, and bore their ears, in which they wear trinkets of various kinds and shapes. Their skin is tawny and
their

their nails of a lighter colour than those of the Chilians.

Of the Americans in the Neighbourhood of Port des Français.

These people appear to me to have very little similarity to the Californians; they are taller, stouter, of a more agreeable figure, and great vivacity of expression: they are also much their superiors in courage and sense. They have rather a low forehead, but more open than that of the southern Americans; their eyes are black and very animated, their eyebrows much fuller; their nose of the usual size and well formed, except being a little widened at the extremity; their lips thinner, their mouth moderately large, their teeth fine and very even, their chin and ears very regular.

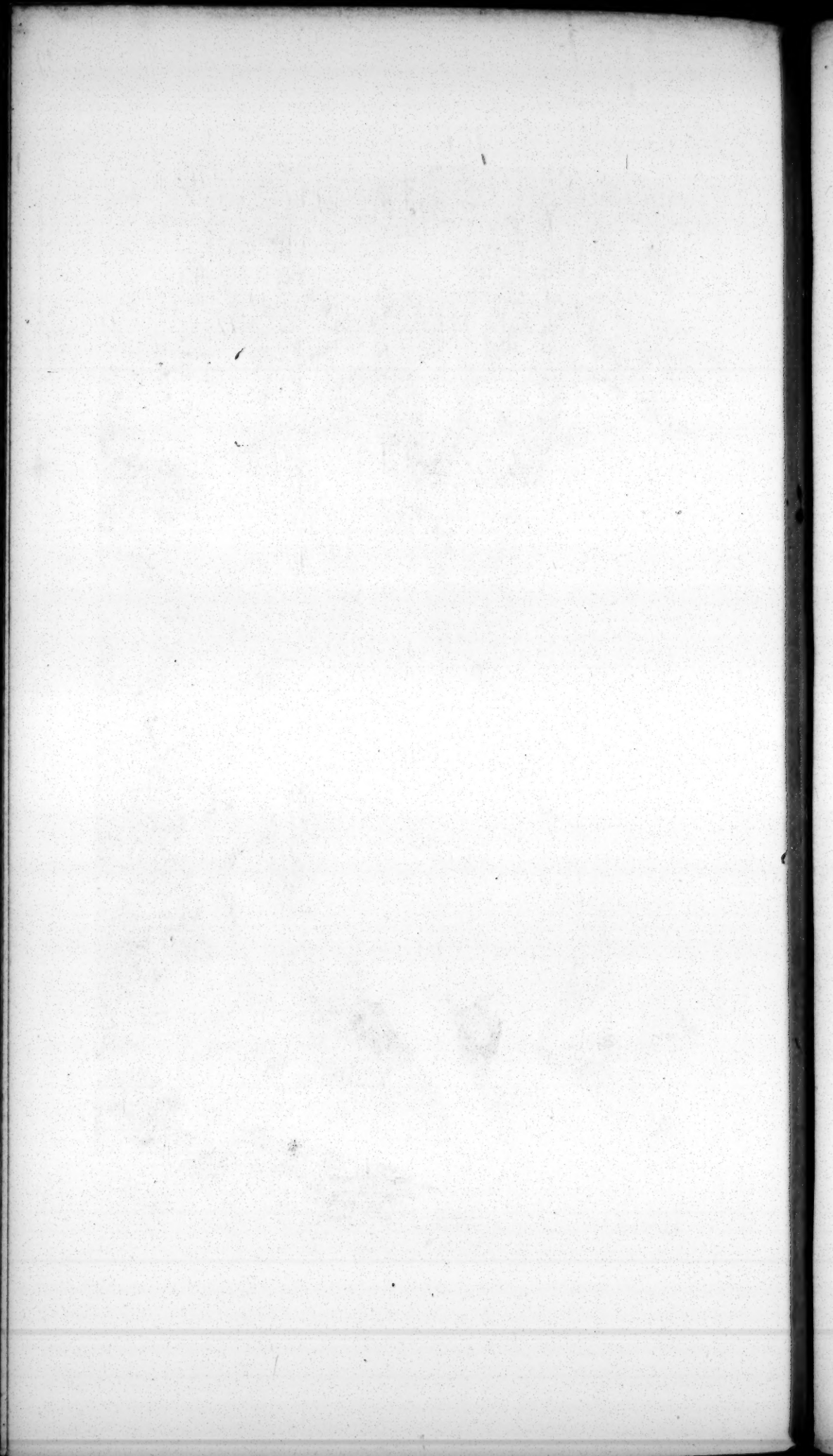
The women also have an equal advantage over those of the preceding tribes; they have much more mildness in their features and grace in their limbs.

Their countenance would be even very agreeable, if, in order to set it off, they did not make use of a strange custom of wearing in the lower lip an elliptical piece of wood, lightly grooved on its circumference and both its sides, and which is common-



J. Walker sc.

A Woman of Port des Français.



ly half an inch thick, two in diameter, and three in length.

This singular ornament, besides being a great deformity, is the cause of a very troublesome as well as disgusting involuntary flow of saliva. This appendage is peculiar to the women; and female children are made to undergo the preparatory operations from the time of their birth.

For this purpose the lower lip is pierced with a kind of pin of copper or gold, which is either left in the opening, or its place is supplied with a ring of the same material, till the period of puberty. The aperture is then gradually enlarged by substituting first a small piece of wood of the form mentioned above, then a larger one, and so on increasing its size by degrees till it reaches the dimensions just stated.

This extraordinary custom shows the great power of dilatation in the lip, and may encourage medical practitioners in their attempts to remedy deformities of this part by the use of the knife.

The general colour of these people is olive, a fainter tinge of which is apparent in their nails, which they suffer to grow very long; the hue of the skin, however, varies in different individuals, and in various parts of the same individual, according to their exposure to the action of the air and sun.

Their

Their hair is in general neither so coarse nor black as that of the South Americans. Chestnut coloured hair is by no means unfrequent among them. Their beard is also fuller, and their armpits and parts of sex better provided with hair.

The perfect evenness of their teeth led me at first to suspect that it was the effect of art; but after an attentive and minute examination, I could perceive no wearing away of the enamel, and I saw that this regularity is natural. They tattoo and paint their face and body, and bore their ears and the cartilage of their nose.

Some writers have imagined, that the custom of painting the face and body, so generally adopted by the Africans, Americans, and West Indians, is only intended as a preservative against noxious insects. I think, however, that I am warranted in asserting its sole end to be ornament. I found it to prevail among the inhabitants of Easter Island, and the natives of *Port des Français*, without observing among them either venomous insects or reptiles. Besides I remarked, that they wore paint only when they paid us a visit, for they made no use of it when in their own houses.

General Observations.

Those writers, who have spoken of the Americans as a degenerated race of men, have given the reins
to

to their imagination, instead of attending to the dictates of truth. Some of them have even gone so far as to extend this idea of deterioration to Europeans, naturalized in America. The refutation of this assertion may be safely left to such men as Washington, Adams, and Franklin, whose extraordinary abilities and merits excuse me from entering into any discussion on this subject.

It appears to me also, that the same writers have not been more happy in their opinions with respect to the supposed degradation of animals transplanted from the old continent to America. As to the existence of those defects, or particular modifications, that have been supposed in the internal structure of the genital parts of those people, and which have also been attributed to the degradation of the human species in America, I can only say, that my opportunities have not enabled me to make the necessary inquiries on this subject; but if it be allowable to judge of the internal organization by the external appearance, I should suppose it to be perfect. Besides, I have never observed among these people either those enlargements of the scrotum, or enormous swellings of the penis, or those men in whose breasts milk is secreted, as travellers have related: nor, on the other hand, have I observed in Americans that superiority in the organs of sense, or greater speed in running, which is commonly attributed to them; and if there really exist a difference

ference as to the perfection of these faculties, it appears to be in favour of civilized nations.

The progress of life among these people appears to have the same periods of growth and decline as amongst us. Some slight differences, however, are caused by the climate, the mode of life, and manners. In Chili and in California the beard makes its appearance, and the voice alters, about the thirteenth year, announcing the age of puberty. The girls generally attain this period about eleven or twelve. The fulness of the breasts and the menstrual discharge are the ordinary signs. The quantity of this periodical evacuation varies in different individuals, according to their constitution and mode of life. If no particular accident interrupts the natural order, this discharge takes place every month, lasting from three to eight days. Women are subject to it till about their fortieth year. It is not, however, rare, to see women give signs of being in a state of child-bearing at a more advanced age. Old age and decrepitude announce themselves among these people, as among civilized nations, by the withering of the body, loss or dimness of sight, and other senses, and change in the colour of the hair and beard. Those women who have had several children have, like Europeans in similar circumstances, the breasts flaccid and pendent, and the skin of the belly wrinkled.

The various tribes of which this people is composed

posed have nearly the same passions, the same exercises, and the same mode of life. They are equally violent in their expression of joy or anger, and extremely susceptible of both. Those of *Port des Français* are daring robbers, excessively irascible, and most of all to be guarded against by strangers. Their ordinary food is game and fish; but though the chase and the fishery offer them fresh provision in abundance, they often prefer tainted and almost putrified food to giving themselves the trouble of procuring better. Their idle disposition renders them still less delicate in the preparation of their food. When pressed by hunger they content themselves with simply broiling it on the fire, or steeping it in a wooden bowl filled with water, which is caused to boil by repeatedly plunging into it red hot stones. Their hours of repast are sometimes determined by appetite, but in general each family about sunset assembles together to a common meal.

The inhabitants of California and *Port des Français* make no use of vegetables, except a few pine nuts, and other spontaneous fruits during the summer; but even these fruits never constitute an essential part of their nourishment. Their idleness keeps them sober, as plenty makes them gluttons.

These tribes are divided into hordes, each of which commonly forms a small hamlet. Their cabins, constructed of twigs or branches, are supported by four stakes, and covered for the most part with

with bark ; they are of a square or conical form, protecting them only very indifferently from the inclemency of the weather ; the entrance is low and narrow, the fire is made in the middle, and the smoke escapes through a hole in the roof. They lie down to sleep indiscriminately, without distinction of age or sex, on skins that they spread round the fire ; they take very little care in building their huts, because the restlessness of their disposition often induces them to quit them for new ones, which they often build by the side of their old ones. The situations that they most prefer are the banks of rivers, or the south side of the mountains. The only habitations at all solid, and of any size, that I have observed on this coast, are those of a horde established on the side of a small river abounding with fish about four miles from *Port des Français*. These cabins were constructed of very thick planks, they were of a rectangular form, about fifteen feet high, and able to contain thirty or forty persons. The doors were low, narrow, and sliding ; the inside offered nothing remarkable : we only observed a kind of bench, on which the women and children were at work on some articles of furniture. They had established on the little river, at the foot of their habitations, a wear for fishing, the construction of which was not less ingenious than those mentioned by M. Duhamel. Of these people, the men particularly attend to martial exercises, to fishing and hunting. Their
arms

arms are the bow, javelin, and dagger. The peculiar province of the women appears to be the cooking of the food, and other domestic concerns. Though their husbands are of a very ferocious disposition, I never observed that they were treated in so barbarous a manner as is reported by most travellers. On many occasions, I observed that they shewed them much regard and deference. It appears, moreover, that polygamy is the custom of these people, and their marriages last only during the pleasure of both parties. They attach very little importance to the exclusive possession of their women, as they often exposed to sale their favours for a piece of iron or a few glass beads.

Though these Americans appear to compose a considerable population, with the same interests and similar manners, yet each family appears to live solitarily, and to have an independent government of its own. Each family has its own chief, its own cottage, its own canoe, its own instruments for fishing and hunting, and, in short, every means of subsistence and defence. I thought, however, that I perceived among them some chiefs, who appeared to command several families, but the respect paid them by the rest was very inconsiderable. These chiefs are taller, stronger, and have more courage than the rest of the inhabitants. They are in general covered with great scars, which they display as testimonies of their valour. They are also dis-

tinguished by a peculiar richness and elegance of clothing. The dress of the women consists of a leather shift, which reaches to the mid-leg, and a fur cloak, which covers them from the shoulder to the knee. The men wear a similar cloak, and sometimes a leathern shirt, and buskins of seals' skins, but commonly they go bare-footed.

It is difficult, not to say impossible, for a traveller unacquainted with their language, and with a very imperfect knowledge of their customs, to give any accurate notions of their domestic economy, and to draw up a methodical and satisfactory account of their diseases. It cannot, however, be doubted, that their manner of life, their intemperance in their pleasures, and the vicissitudes of their climate, expose them to many disorders, and I shall enter a little into detail concerning the diseases of the natives of California.

The great number of Americans, who are assembled in the mission of San Carlos, gave me an opportunity of observing several of these diseases, in which I was assisted by father Matthias, missionary, and M. Carbajole, surgeon in chief of the colony.

The temperature of California undergoes great alterations at different periods of the year; and its influence on the inhabitants occasions peculiar diseases: for though these people appear accustomed to the sudden variations of the atmosphere, they are,
however,

however, more subject than Europeans to maladies caused by continued excess of temperature. Sore throats, catarrhal affections, pleurifies, and peripneumonies, are the most common winter diseases. The remedies that they have recourse to consist of ptisans, made with different plants, which they afterwards bruise, and apply to the part affected. When these disorders attain a certain height, they commonly degenerate, through the inefficacy of their modes of cure, into chronic disorders, and those patients who have survived the first stage of the disease, usually fall victims to it in the form of phthisis pulmonalis. Quotidian and intermittent fevers, and dyspeptic symptoms, occur chiefly in spring and autumn. I am not certain whether these people be acquainted with any remedy in the treatment of fevers, which supplies with them the place of the cinchona. Their practice seems to consist solely in exciting vomiting, by thrusting the finger down the throat, and copious sweats by vapour baths, which I shall describe presently. The most common summer disorders are putrid, petechial, inflammatory, and bilious fevers, and dysentery. Their want of care and knowledge in the treatment of these diseases almost always causes them to terminate fatally, and when the efforts of nature are insufficient to induce any salutary evacuation either by stool, urine, or sweat, the patient dies.

It is observable, that these critical evacuations are

almost always serviceable to the patient, when they occur from the eleventh to the twenty-first day, reckoning from the commencement of the complaint. Their most formidable disorders are inflammatory and bilious fevers, for their progress is so rapid as seldom to leave the patient strength to struggle through.

Beside these, the Californians are also liable to nervous fever, rheumatism, itch, ophthalmia, lues, and epilepsy. I saw, at the mission of San Carlos, a woman affected with this last, of which the fits commonly lasted about two hours. Most of these Americans are affected with ophthalmia and itch, yet they make no use of spirituous liquors or fresh or salted pork, which are generally supposed to be the cause of these complaints, as well as of other cutaneous affections to which they are so subject: nor do I think that these are with any better reason attributed to tatooing and painting the skin.

The inhabitants of Baie des Français have the same customs, and besides live in a very filthy manner; yet instances, or even traces of itch are very rarely to be met with among them. It may not be improper to add, that on board our ships on the American station, during the last war, I observed, that in the course of five or six months a great number of our sailors, and even officers, were affected with cutaneous disorders, that resisted every remedy which we applied, but which for the most part disappeared of themselves, on our removal

into more temperate climates. From all these circumstances, it appears certain, that the cutaneous disorders which so generally affect the inhabitants in the neighbourhood of the equator, are caused by an acrimonious alteration of the humours brought on by the great heat of these climates; and I have no doubt, that the constant action of the air and sun upon the skin of these people, who go continually naked, contributes much to these maladies, and renders them more obstinate. Every person knows, that they were formerly very common in Europe, and that they have lost much of their malignity, and are become comparatively rare, in proportion as the use of linen and habits of neatness succeeded to the gross and filthy mode of life, which took place on the fall of the Roman empire.

Epidemic diseases, such as the small-pox and measles, occur only accidentally in America, that is, are always imported by European vessels. The natives, however, are very liable to the infection, and the attacks of the small-pox especially prove far more fatal to them than any other disorder. The symptoms and progress of this malady are the same as take place among Europeans; it also assumes the characters of distinct, and confluent or malignant, but it generally makes its appearance under this last form.

The venereal disease, which, according to common tradition, was unknown in Europe till the return of

Columbus, appears, from the testimony of several sensible men at Monterey, to whom I put the question, to have originated in California from the connexion of the natives with those Europeans who are settled in this part of the new continent. Whatever be the source of this disease among these people, the symptoms that denote it are nearly the same as with us, such as buboes, chancres, excrescences, and gonorrhœa.

The modes of cure, in which the natives appear to place the most confidence, are, the sand-bath, called by them *tamascal*, and a warm sudorific drink, prepared by the decoction of certain herbs, which produce, as I have been informed, very uniform effects.

The manner of preparing the *tamascal* consists of scooping a trench in the sand, two feet wide, one foot deep, and of a length proportioned to the size of the patient; a fire is then made through the whole extent of it, as well as upon the sand, which was dug out of the hollow. When the whole is thoroughly heated, the fire is removed, and the sand stirred about, that the warmth may be equally diffused. The sick person is then stripped, laid down in the trench, and covered up to his chin with heated sand. In this position a very profuse sweat soon breaks out, which gradually diminishes, according as the sand cools. The patient then rises and bathes in the sea, or the nearest river. This process

cess is repeated till a complete cure is obtained. The plant which they generally make use of in venereal cases, is known to the Spaniards by the name of *gouvernante*. The following are the characters of this plant, taken from dried specimens:

Calyx quadrifid, egg-shaped, of the same size with the corolla; placed beneath the fruit, deciduous.

Corolla polypetalous; petals four, small, entire, egg-shaped, fixed upon the receptacle.

Stamina, eight, fixed to the receptacle, of the same length as the corolla: threads channelled, concave on the one side, and convex on the other; wings veiled, antheræ simple.

Pistil, germ oblong, covered, with five angles, and five cells; seeds oblong; pericarpium covered with fine hairs.

This plant is a shrub of middle size; the branches are angular and knotty, and covered with an adhesive varnish; the lateral branches are alternate, and placed very near to each other: the leaves are small, petiolated, bilobed, opposite, smooth on the upper side, the under side indistinctly veined; the blossoms are axillary, sometimes terminating, pedunculated, solitary, but sometimes in pairs.

The women are subject to the peculiar disorders of their sex, independently of those which are common to them and the men, such as those which are

the consequences of lying-in, uterine hemorrhages, abortions, &c.

It is however observable, that they experience very few inconveniences during pregnancy, and are very generally delivered with great ease. Difficult labours are very rare among them, but when they happen, the mother and child generally fall victims; an event which can only be occasioned by a narrow pelvis, or by an unusual presentation of the child.

In natural labours, the first pains are usually soon followed by the expulsion of the child. The little danger attending this is owing, doubtless, to the uncommon size of the pelvis, as will be shown in the table of proportions.

As soon as the child is born, the old women, who supply the place of midwives, tie the umbilical cord and wash it in cold water. The mother is no sooner delivered than she goes to bathe in the sea, or the next river. As soon as she comes out of the water, she is seated on a warm stone, and covered with fur, in which position she remains till the sweat thus brought diminishes as the stone grows cool. This is immediately succeeded by a fresh bathing, and is sometimes repeated a few days successively. These immersions, and this kind of vapour bath, which are generally made use of by the Americans in their treatment of most diseases, are occasionally attended with inconvenience, especially after lying-in.

In

In this case they frequently produce suppression of the lochia, inflammation of the parts of generation and urinary passage, with suppression of urine and scirrhus of the breast, which sometimes terminates in cancer. There was about six months ago, in the mission of Monterey, an example of a woman about twenty-five years old dying of a cancer, which had corroded one breast and four of the ribs.

When any accidents are the consequence of this mode of treatment, the old women confine their practice to fomentation of the parts affected, with a decoction of plants or emollient seeds. The seed that is commonly made use of in these cases, as well as in acute fevers, both for drink and fomentation, resembles linseed very much in form, colour, and general appearance, and an infusion affords a similar mucilage. It is called by the Americans *passelle*.

The birth of the child occasionally happens before the end of the ninth month, and these instances of abortion are by no means uncommon. In these cases the same treatment is observed as if they had completed their full time, except in case of flooding; the woman then continues in bed, and cold applications are made to the lower part of the abdomen. I have not been able to learn by what means the placenta is extracted.

Children at the breast are not exempt from the ordinary infirmities of infancy, except rickets, of which

which I have not seen a single instance. They are subject, like European children, to diseases attending dentition, excoriations about the anus, convulsions, hooping-cough, worms, and the worm-fever, suppression of the meconium, diarrhoea, marasmus, and squinting, &c. The time of suckling is not limited, sometimes it is very short, but commonly the mothers suckle their children to the age of eighteen or twenty months. The manner in which they swathe their children, consists in wrapping them up in fur, having previously stretched out the legs and fixed the arms to the sides of the body by means of leather thongs; they then take off the bark from a tree of the size of the child, and in the form of a hollow tile, in which the infant is fastened by thongs of skin. As to the brown spots which some travellers are said to have observed on the backs of these children, I must confess that I never saw any such thing. In short their organization appeared to be perfectly natural.

Although the disorders to which the natives of California are subject are very numerous and various, the methods of cure that they make use of are nearly the same in all. I have already said, that they consist in the use of a few plants, cold bathing, and stoving. The application of these remedies, although very much at random, is directed by certain physicians, or rather conjurors, who endeavour to in-

spire confidence by pretended inspiration, and extravagant gestures.

The external disorders, or those which come under the province of surgery, to which the natives of California are most subject, are fractures, wounds, ulcers, tumours, ruptures, and luxations. The mode of treatment among these people for the cure of ulcers and wounds differs but little from that of other common accidents, they leave them to nature. In more serious cases, they only make an application of some entire or bruised plants to the part affected. If the ichorous-discharge from the ulcers inflame or corrode the neighbouring parts, they bathe them with an emollient lotion, and when a wound is accompanied with great hemorrhage, they stop it with hair, and produce a gradual compression by means of slips of skin analagous to our bandages. If this be not sufficient to stop the effusion of blood, the patient commonly dies; but if it should be successful, they suffer the hair to remain in the wound till it is brought out by suppuration, and conduct the remainder of the cure as in common cases. The cicatrices of wounds or other injuries of the soft parts are generally very defective.

If the Californians poison their arrows according to the practice of some of the American tribes, the substance used for this purpose is very slow in its operation, and but very little dangerous; for the Spaniards,

Spaniards, who have been settled among them several years, have met with no instance of wounds occasioned by these arrows being fatal.

When these people are affected with simple tumours, they take no care of them; but if inflammation come on, they make use of topical emollients or fomentations. Tumours formed by the displacing of parts, such as ruptures, are very frequent, especially among the children. They seem to be wholly ignorant of the method of returning the parts, or of supporting them, when reduced, by a bandage. I reduced several of these tumours in children in the presence of their parents, with the design of instructing them in the process, so as to heal or prevent accidents arising from these disorders; but their want of understanding leaves me much in doubt with regard to the efficacy of the pains which I took. Their knowledge also of the art of reducing dislocations is very limited; they make some efforts to reduce the limb, but so ill directed, as to be generally without success. Their treatment of fractures discovers more sense: they place the ends of the broken bone in contact, retaining them in their proper position by a bandage, and laying the limb in a case made of bark that is firmly fastened by thongs of leather; and the patient is enjoined to keep perfectly quiet till the consolidation of the part.

I have

I have thought, that the reader would be able more readily to compare the different proportions of these people, by forming them into a table, and marking the places and latitudes where these proportions were measured. But it will be observed, that there exist in the constitutions of these people differences, which are modified in a very remarkable manner by climate, exercise, mode of life, and even prejudices.

Proportion of the Area		Proportion of the Volume	
1	0.00	1	0.00
2	0.00	2	0.00
3	0.00	3	0.00
4	0.00	4	0.00
5	0.00	5	0.00
6	0.00	6	0.00
7	0.00	7	0.00
8	0.00	8	0.00
9	0.00	9	0.00
10	0.00	10	0.00
11	0.00	11	0.00
12	0.00	12	0.00
13	0.00	13	0.00
14	0.00	14	0.00
15	0.00	15	0.00
16	0.00	16	0.00
17	0.00	17	0.00
18	0.00	18	0.00
19	0.00	19	0.00
20	0.00	20	0.00
21	0.00	21	0.00
22	0.00	22	0.00
23	0.00	23	0.00
24	0.00	24	0.00
25	0.00	25	0.00
26	0.00	26	0.00
27	0.00	27	0.00
28	0.00	28	0.00
29	0.00	29	0.00
30	0.00	30	0.00
31	0.00	31	0.00
32	0.00	32	0.00
33	0.00	33	0.00
34	0.00	34	0.00
35	0.00	35	0.00
36	0.00	36	0.00
37	0.00	37	0.00
38	0.00	38	0.00
39	0.00	39	0.00
40	0.00	40	0.00
41	0.00	41	0.00
42	0.00	42	0.00
43	0.00	43	0.00
44	0.00	44	0.00
45	0.00	45	0.00
46	0.00	46	0.00
47	0.00	47	0.00
48	0.00	48	0.00
49	0.00	49	0.00
50	0.00	50	0.00

These propositions were mentioned in the following manner: On the one
atom, from the head of the hammer is the extremity of the handle; from
of the lower extremity, from the head of the hammer is the handle; from
the head, from the head to the great tree, for the breadth of the chest, from the
rotation of the hammer and the width of the chest, the rotation of the
the vertical column was taken from the thickness of the chest, from the
the long character of the head, from the height of the chest, the depth of the
vertical of the chest, and the head, from the head, from the head, from the head,
from the head.

*Comparison of the Proportions of the Natives of both sexes
of the continent of America, with the latitude of the
places where they were measured.*

Names of Places - - - - -	Conception	Monterey.	Baie des Français.
Latitudes - - - - -	D M 36 41 South.	D M 36 41 North	D M 58 38 North.
Proportion of the Men.			
	Feet. Inch. Lin.	Feet. Inch. Lin.	Feet. Inch. Lines.
Common stature - - - - -	5 1 0	5 2 6	5 3 0
Long diameter of the head - - -	0 8 4	0 9 0	0 9 5
Short diameter of Do. - - - -	0 5 0	0 5 4	0 5 6
Length of the upper extremities -	2 1 6	2 1 9	2 2 3
Do. of the lower - - - - -	2 8 0	2 9 0	2 10 5
Do. of the feet - - - - -	0 9 4	0 10 0	0 10 6
Breadth of the chest - - - - -	1 0 0	1 1 0	1 1 4
Do. of the shoulders - - - - -	1 4 8	1 7 0	1 7 5
Height of the vertebral column -	1 10 0	1 11 0	1 12 0
Circumference of the pelvis - -	2 4 4	2 6 8	2 7 5
Proportion of the Women.			
Long diameter of the head - - -	0 8 0	0 8 5	0 8 10
Short diameter of Do. - - - -	0 4 11	0 5 3	0 5 5
Length of the upper extremities -	2 0 7	2 1 0	2 1 6
Do. of the lower extremities - -	2 5 2	2 6 0	2 6 8
Do. of the feet - - - - -	0 8 0	0 8 6	0 8 9
Breadth of the chest - - - - -	0 10 6	0 10 9	0 11 3
Do. of the shoulders - - - - -	1 2 0	1 2 8	1 3 2
Height of the vertebral column -	1 8 0	1 8 6	1 8 9
Circumference of the pelvis - -	2 5 0	2 6 0	2 6 9
Distance from one anterior superior spinous process to the other - -	0 8 0	0 8 5	0 8 10

These proportions were measured in the following manner: for the upper extremities, from the head of the humerus to the extremity of the middle finger: for the lower extremities, from the head of the femur to the heel: for the feet, from the heel to the great toe: for the breadth of the chest, from the articulation of the humerus on the one side to that of the other: the height of the vertebral column was taken from the first cervical vertebra to the sacrum: the long diameter of the head, from the superior angle of the occiput to the symphysis of the chin; and the short diameter, from the centre of one parietal bone to the other.

M E M O I R

CONCERNING CERTAIN INSECTS,

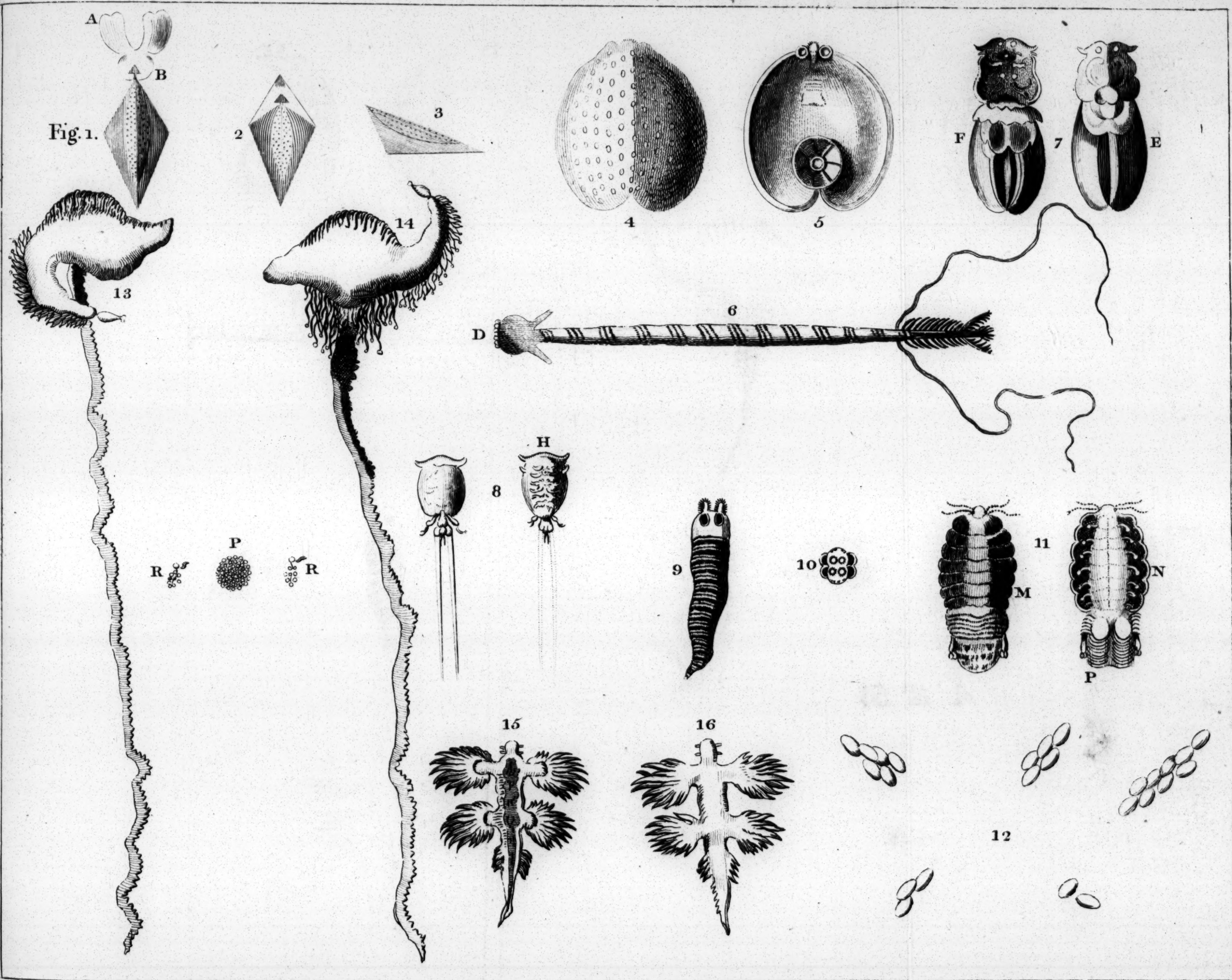
By La Martiniere, Naturalist.

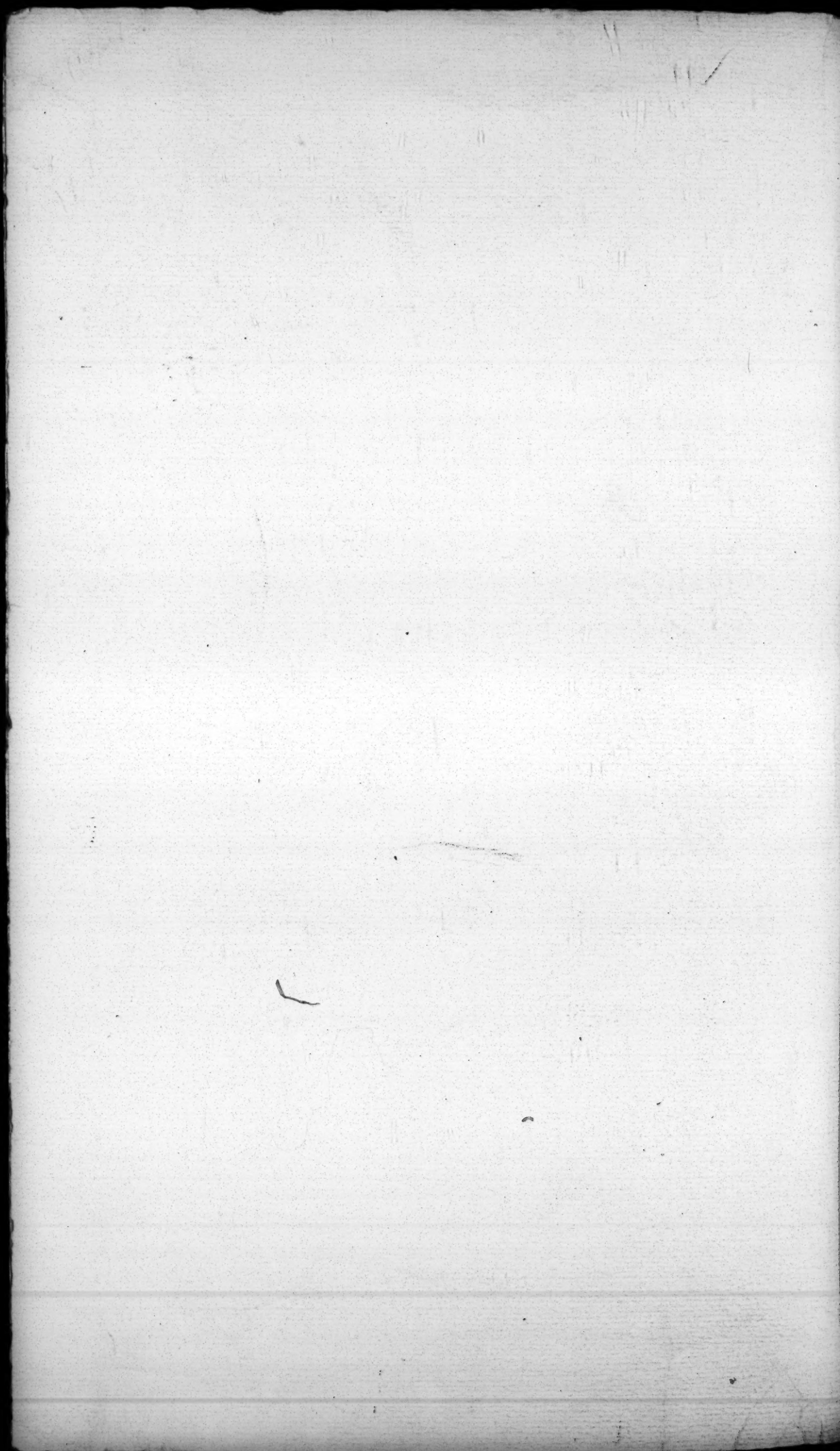
THE insect, which is figured N° 1, inhabits a small prismatic triangular cell, pointed at the two extremities, of the consistence and colour of clear brittle ice: the body of the insect is of a green colour, spotted with small bluish points, among which are some of a golden tinge; it is fixed by a ligament to the lower part of its small habitation: its neck is terminated by a small blackish head composed of three converging scales, in the form of a hat, and enclosed between three fins, two of them large and channelled in the upper part (A) and one small, semicircular, (B). When it is disturbed it immediately withdraws its fins and its head into its cell, and gradually sinks into the water by its own specific gravity. Fig. 2 represents the under side of the prism, shewing in what manner it is channelled, in order to allow free passage to the animal when it wishes to shut itself up in it. Fig. 3 represents the profile of the same. The movement carried on by the two larger fins, which are of a softish cartilaginous substance, may be compared to that which would be produced by the two hands joined together in the state of pronation, and forming, alternately, two inclined planes and one horizontal plane: it is by means of

of this motion that it supports itself on the top of the water, where it probably feeds on fat and oily substances on the surface of the sea. I found it near Nootka, on the north-west coast of America, during a calm.

The next insect (Fig. 4 and 5) is nearly the shape of a watch-glass, with a single channel on the circumference; its body is of a cartilaginous consistence, of a dullish white colour; its upper part (Fig. 4) is covered with oval spots of the colour of lees of wine. Fig. 5 represents its under-side, in which are seen three elevations of the form of cups, two towards the proboscis of the animal, and a third, by far the largest, near the channelled part of its body. This last is divided by seven small whitish ribs, of which the middle one stands out a little from the rest; it is by means of these different cup-like protuberances that it fixes itself very firmly on the body of different fish or marine animals, probably by causing a vacuum, and not by means of any glutinous and tenacious liquor: it is perhaps by the same means, that limpets and barnacles fix themselves so firmly to rocks. Its proboscis, which is situate between its two small upper protuberances, has its extremity fringed with points, which are perhaps the mouths or organs by which it sucks the blood of the fish on which it feeds. On its under-side may be seen, through the substance of the animal, several convolutions of intestines, which terminate in a small and nearly square reservoir.

Though





Though this animal is without legs, it is capable of progressive motion by means of its three protuberances which it alternately advances. It is also capable of descending to the bottom of the water, though its form would appear to render this by no means easy: the manner in which it performs this is by rolling itself up, and keeping itself in this position, by fixing its two upper protuberances on the posterior and superior part of its body, and by thus diminishing its surface it sinks by its own specific gravity. I found it sticking to the body of a fish of the genus *diodon* Linn. which we frequently met with in our passage from Nootka to Monterey.

The species of *pennatula* * (Fig. 6), appears to me to have characters hitherto undescribed, on which account I have given a figure of it. Its body is of a cartilaginous substance, and a cylindrical form; its head, armed with two little horns of the same substance, presents a spherical figure flattened at its anterior extremity. This part is covered with small papillæ, some of which are visible at (D), and which serve the purpose of small mouths, by means of which this animal sucks the blood of fishes, making its way as far as possible into the flesh: the extremity of its body, which always projects from the fish, appears like the feathers of a pen; these feather-like substances serve as excretory vessels, as I am well assured, for on making a slight

* Or rather of *lernæa*.

pressure on the animal, from the greater part of these cartilaginous barbs issued small drops of a very limpid liquor: at the base of these barbs, and beneath the body, are placed two large cartilaginous threads, of which I cannot imagine the use, for they are not universally met with in each individual. The circulation of its blood is readily observed, it forms a complete revolution about once in a minute. These undulations I have endeavoured to imitate in the engraving. It is probable that this animal is only able to make its way into the bodies of different fish when it is very young, and when it has once buried itself there, having abundance of nourishment, its head increases considerably, and the two horns with which it is furnished necessarily form an obstacle to its regress, which is a remarkable instance of the foresight of nature, since it is destined to be nourished at the expence of another. I found it at the depth of more than an inch and a half in the body of a *diodon* taken near Nootka.

Fig. 7, represents an insect very nearly answering to the generic character of *oniscus* of Linnæus. At (E) is a view of the upper part of its body, and at (F) of the lower. Its body is crustaceous, and of an opake white, with two round rust-coloured spots on the anterior part of its corselet; two others, much larger, in the form of a crescent, are on the *elytræ*; its shield is also of the same colour. The under part of the thorax is furnished with four pair
of

of legs, the first and third of which are terminated with sharp claws; the second, from its form, serves it to swim with; the fourth is very small, consisting of two membranaceous threads. Some scales, also membranaceous and very channelled, may also perform the office of legs: of these the two lower are the largest. Its belly is filled with vermicular intestines of the size of a hair; its mouth is placed between the first and second pair of legs, and is of the form of a small trunk placed between two lips joined only at the upper extremity. I found the insect fixed in the ears of the *diodon*, to which the two former insects were found adhering.

Fig. 8, represents an insect of the genus *oniscus* Linn. Its body is nearly of the form, consistence, and colour, of the *oniscus asellus*, except that it is not divided by segments as this last is. It has a double tail three times as long as the body, from the insertion of which at the hinder part of the body spring two legs, used chiefly by the animal in swimming upon its back. The insect viewed on the lower part (H) presents six pair of legs, the two first of which terminate in very sharp and thick points; it makes use of the third to swim with, and to balance its body, together with that pair which is inserted at the base of the tail; the fourth pair, and the largest of all, is armed with two very sharp points, which the animal forces into the body of any fish on which it seizes; the two last pair are nothing more

than very finely divided membranes. Between the two first is situate its trunk, smooth and about half a line long; at the base of the third pair are two points of a horny consistence, very hard, and firmly fixed: the two horns also below the large pair of legs are in like manner very firmly united to its body. I imagine it to be by means of these darts that it pierces the body of the fish on which it is found, and that then changing its situation, it finds means to introduce its trunk into the holes thus formed. When put into a glass it sinks to the bottom and rises again to the surface with the greatest ease, advancing with the edge of its body and describing curves. Its two long tails are very easily pulled off without the animal appearing to suffer any pain. This insect was found in great quantities fixed on the body of the same *diodon* *.

Fig. 9, represents a leech of its natural size: it is of a whitish colour, and is composed of several rings, similar to those of the *tænia*. The superior part of its head is furnished with four small ciliated mamillæ, by which it takes in food: under each mamilla on both sides is a small oblong pouch, in form of a cup. Fig. 10, is a front view of it, exhibiting the four mamillæ. I found this leech

* This insect appears to be rather a *monoculus* than an *eniscus*; the head being a single piece.

buried about half an inch in a shark's liver, but am wholly ignorant how it got there*.

Fig. 11, represents the *oniscus phrygades* of Linnæus, which has already been very well described, but of which I have given a figure, because I believe there has hitherto been no drawing of it. There are nine vesicles on each side laid like tiles on the lower surface of its rounded tail (P). This species of oniscus was found by me in the ears of a new species of pleuronectes Linn. very frequently caught in the road of Monterey. M is an upper view of the animal, and N an under one, in which its fourteen feet are visible.

Of all the insects here delineated the most simple, and that the study of which has given me the greatest pleasure, is represented at Fig. 12. They consist only of oval bodies similar to a soap bubble, arranged in parties of three, five, six, and nine: among them are also some solitary ones. These collections of globules, being put into a glass filled with sea-water, described a rapid circle round the glass by a common movement, to which each individual contributed by simple compression of the sides of

* This animal, from the form of its *instrumenta cibaria*, comes very near to that which Gog supposes to be the cause of measles in swine. Both these species are referable to the genus *hirudo*, the characters of which as given by Linnæus stand in need of reformation.

its body, probably the effect of the reaction of the air with which they were filled. It is not, however, easy to conceive how these distinct animals (for they may be readily separated without deranging their economy) are capable of concurring in a common motion. These considerations, together with the form of the animal, recalled to my mind, with much satisfaction, the ingenious system of M. de Buffon; and I endeavoured to persuade myself, that I was about to be witness to one of the most wonderful phenomena of Nature, supposing that these molecules, which were now employed in increasing or diminishing their number or performing their revolutions in the glass, would soon assume the form of a new animal of which they were the living materials. My impatience led me to detach two from the most numerous group, imagining that this number might perhaps be more favourable to the expected metamorphosis. I was, however, mistaken. These I examined with more attention than the rest, and the following account is of their proceedings alone. Like two strong and active wrestlers they immediately rushed together, and attacked each other on every side: sometimes one would dive, leaving its adversary at the surface of the water; one would describe a circular movement, while the other remained at rest in the centre; their motions at length became so rapid as no longer to allow me to distinguish one from the other. Having quitted
them

them for a short time, on my return I found them reunited as before, and amicably moving round the edge of the glass by their common exertions. I shall often think with pleasure on my little molecules for the entertainment that they afforded me.

Natural history, in many of its departments but dry, would not, in my opinion, have so many attractions for those who devote themselves to it, if they were not so fortunate as to meet with objects that agreeably occupy their imagination.

The species of medusa (if it do not rather constitute a new genus) which is represented in two different attitudes, figures 13 and 14, is nearly of the same shape as a bagpipe: it is merely a white transparent vesicle, furnished with several blue tentacles yellowish at their extremity; its long tail, which is also blue, appears to be composed of a number of small glandulous grains, flattened and united together by a gelatinous membrane. The upper part of the vesicle exhibits a kind of seam with alternate punctures of three different sizes; its elongated part, which may be considered as the head of the animal, is terminated by a single trunk, the exterior edge of which is fringed with twenty-five or twenty-six tentacles much smaller than those which originate from the insertion of its long tail, and the number of which sometimes amounts to thirty. By means of these last, the diameter of which it is capable of increasing at pleasure by forcing in a

little of the air from its body, it fixed itself to the side of the vessel, in which I had placed it, in such a manner as that the extremity of some of its tentacles occupied a surface of two or three lines from its body. The most moveable part of the vesicle is its elongation or the head of the animal, as it is by means of this that it performs its different motions.

The rounded substance, marked by the letter P, is situate in the centre of the larger tentacles, which are firmly fixed to the body of the animal near its tail; and is only an assemblage of a few minute gelatinous globules, from the middle of which arise other larger globules, with a small peduncle, about the middle of which is fixed a curved bluish coloured body, which is represented magnified in two positions at R; the use of it I am wholly unacquainted with.

I met with this animal on the 18th of November 1786, about the 20° of latitude, and 179° east longitude: it was found also in great abundance at the landing place of the Baschi or Bashee Islands, where also I took the following.

This singular animal considerably resembles a little lizard; its body is of a firm, gelatinous consistence; its head is furnished on each side with two small gelatinous horns, of which the two hindmost are situate the furthest inward: its body is provided with four open fan-like paws, and some appendages near the insertion of the tail, and terminates
like

like that of a lizard: the ridge of the back is divided the whole way down by a band of a deep blue; the rest of the body, as well as the inside of its paws, is of a bright silvery white. It appears to be very sluggish in its motions, and when disturbed by the finger merely turned itself belly upwards, soon afterwards resuming its former position. Fig. 16 represents it reversed. I caught it during a calm at the landing place on the Bashee Islands.

DISSERTATION

ON THE NATIVES OF TCHOKA ISLAND, AND ON
THE EASTERN TARTARS,

By M. ROLLIN, M. D. and Surgeon of the Frigate
BOUSSOLE.

ON the 12th of July, 1787, we anchored in Baie de Langle, situate on the western side of Tchoka or Ségalien Island. When we went on shore the next day, the natives pressed round us, eager to give us those marks of good will, which caused us to think very highly of their hospitality to strangers.

These people are very intelligent and honest, and having no distrust about them, readily communicate with strangers. They are of a moderate size, squat, and strong built, with the muscles of their bodies very exactly defined: their common height is five feet, and the greatest does not exceed five feet four inches; but men of this size are very uncommon among them. They have all a large head, and a broader and more rounded face than Europeans; their countenance is animated and agreeable, though, upon the whole, it is destitute of that regularity and grace which we esteem so essential to beauty: they have

have large cheeks, a short nose rounded at its extremity, with very broad nostrils: their eyes are lively, of a moderate size, for the most part black, though we saw some blue ones among them: their eyebrows are bushy, their mouth of the common size, their voice is strong, their lips are rather thick, and of a dull red: we remarked, that in several the upper lip was tattooed and tinged of a blue colour: these, as well as their eyes, are capable of every variety of expression: their teeth are white, even, and of the usual number; their chin is rounded and a little advancing; their ears are small: they bore and wear in them glass ornaments or silver rings.

The women are not so large as the men, and are of a more rounded and delicate figure, though there is but little difference between the features of their faces. Their upper lip is tattooed all over of a blue colour, and they wear their hair long and flowing: their dress hardly differs from that of the men; the colour of the skin in both sexes is tawny, and that of their nails, which they suffer to grow to a great length, is a shade darker than that of Europeans. These islanders are very hairy, and have long beards, which gives, especially to the old men, a grave and venerable air; these last appear to be held in much respect by the younger part of the inhabitants. The hair of their head is black, smooth, and moderately strong; in some it is of a chestnut colour: they all wear it round, about six inches

inches long behind, and cut into a brush on the top of their head and over the temples.

Their clothing consists of a kind of furtout which wraps over before, where it is fastened by little buttons, strings, and a girdle placed above the haunches. This furtout is made of skin or quilted nankeen, a kind of stuff that they make of willow bark: it generally reaches to the calf of the leg, and sometimes even lower, which for the most part renders the use of drawers unnecessary: some of them wear seal-skin boots, the feet of which, in form and workmanship, resembles the Chinese shoe; but the greater number of them go bare-footed and bare-headed: a few indeed wear a bandage of bear-skin round the head; but this is rather as an ornament than a defence against the weather.

Like the lower classes of the Chinese, they all wear a girdle, to which they hang their knife as a defence against the bears, and several little pockets, into which they put their flint and steel, their pipe, and their box of tobacco; for they make a general practice of smoking.

Their huts are sufficient to defend them against the rain and other inclemencies of the air, but are very small in proportion to the number of the inhabitants which they contain. The roof is formed of two inclined planes, which are from ten to twelve feet high at their junction, and three or four on the sides; the breadth of the roof is about fifteen feet,
and

and its length eighteen: these cabins are constructed of frame work, strongly put together, the sides being filled up with the bark of trees, and the top thatched with dry grass in the same manner as our cottages are.

On the inside of these houses is a square of earth raised about six inches above the ground, and supported on the sides by strong planking; on this they make the fire: along the sides of the apartment are benches twelve or fifteen inches high, which they cover with mats, on which they sleep.

The utensils that they employ in cooking their food consist of an iron pot, shells, vessels made of wood and birch bark, of various shapes and workmanship; and, like the Chinese, they take up their food with little sticks: they have generally two meals in the day, one at noon, and the other in the evening.

The habitations in the south part of the island are much better built and furnished, having for the most part planked floors; we saw in them some vessels of Japan porcelain, on which the owners appeared to set great value, probably because they are not to be procured but with great trouble and at considerable expence. They cultivate no kind of vegetable, living only on dried and smoked fish, and what little game they take by hunting.

Each family has its own canoe, and implements for fishing and hunting. Their arms are bows,
4 javelins,

javelins, and a kind of spoutoon, which they use principally in bear-hunting. By the side of their houses are the magazines, in which they lay up the provision which they have prepared and collected during summer for their winter subsistence. It consists of dried fish, and a considerable quantity of garlic and wild celery, angelica, a bulbous root which they call *apè*, better known under the name of the yellow lily of Kamtschatka, and fish oil, which they preserve in the stomachs of bears, and other large animals. These magazines are made of planks, strongly and closely put together, raised above the ground on stakes about four feet high.

Dogs are the only domestic animals belonging to the natives of Tchoka; they are of a middling size, with shaggy hair, pricked ears, and a sharp long muzzle; their cry is loud and not savage.

These islanders are the only uncivilized people that we have visited, if, indeed, they may with propriety be called uncivilized, who make use of looms; theirs, though small enough to be easily portable, is a very complete instrument. They also prepare, by means of spindles, thread of the hair of animals, or the bark of willow, and the great nettle, from which they fabricate their stuffs.

These people, who are of a very mild and unsuspecting disposition, appear to have commercial intercourse with the Chinese by means of the Mantchou Tartars, with the Russians to the north

north of their island, and the Japanese to the south: but the articles of trade are of no great consequence, consisting only of a few furs and whale oil. This fish is caught only on the southern coast of the island: their mode of extracting the oil is by no means economical; they drag the whale on shore on a sloping ground, and suffering it to putrefy, receive in a trench, at the foot of the slope, the oil, which separates spontaneously.

The island of Tchoka, called so by its inhabitants, named *Oku Jesso* by the Japanese, and by the Russians, who are only acquainted with the northern part of it, *Ségalien Island*, comprehends, in its longest diameter, the whole space between the 46th and 54th parallel.

It is well wooded, and mountainous towards the centre, but is flat and level along the coast, the soil of which appears admirably adapted to agriculture: vegetation is extremely vigorous here; forests of pine, willow, oak, and birch, cover nearly the whole surface. The sea abounds with fish, as well as the rivers and brooks, which swarm with salmon and trout of an excellent quality.

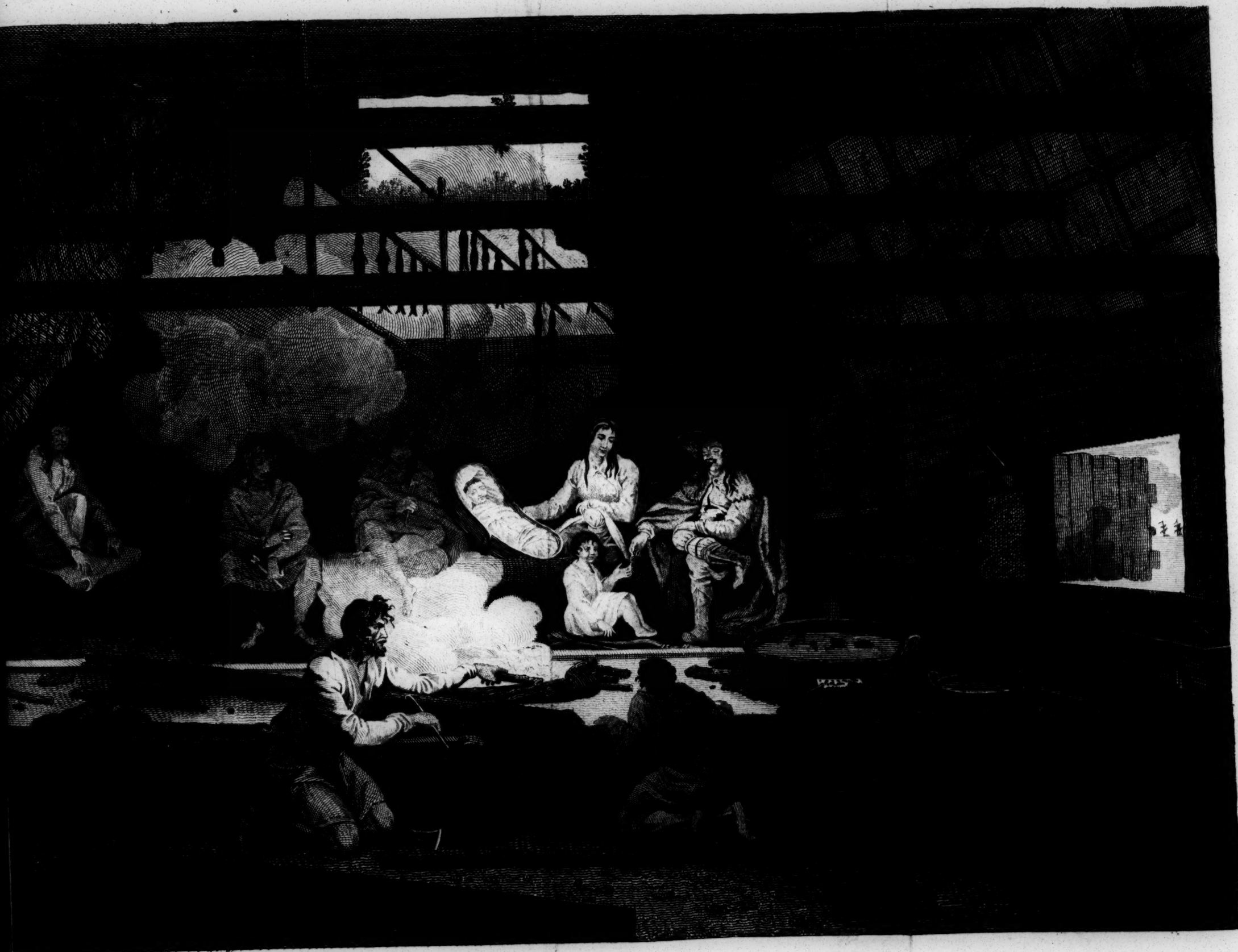
The weather, during our stay here, was foggy and mild. All the inhabitants have an air of health and strength, which they retain even to extreme old age; nor do I observe among them any instance of defective organization, or the least trace of contagious or eruptive disorders.

After

After having had much intercourse with the natives of Tchoka island, which is separated from the Tartarian coast by a channel, that we supposed formed a communication between the seas of Japan and Okhotsk, we continued to stand to the north; but the depth of water having gradually, and through the whole breadth of the channel, shoaled to six fathoms, M. de la Pérouse thought it expedient, in order to avoid endangering the safety of the ships, to bear away to the south, as the impossibility of reaching Kamtschatka through this channel was clearly demonstrated. But the continuance of the fogs, and the obstinacy of the south winds during the four months that we had been at sea, rendered our situation very critical, and exposed us in this enterprise to considerable hazard and much loss of time.

The wood and water that we had taken in at Manilla being consumed, we sought for an opportunity of recruiting our store, before attempting any new enterprise. The weather clearing up on the 27th of July, we were enabled to explore a large bay, in which we anchored: it offered to us a safe retreat from storms, and an easy mode of procuring the supplies of which we stood in need. This bay is on the Tartarian coast, in $51^{\circ} 29'$ north latitude, and $139^{\circ} 41'$ longitude. We gave it the name of *Baie de Castries*.

The country is very mountainous, and so covered



Manners of the Inhabitants of the Bay de Castries.

ed with wood, owing to the luxuriance of vegetation, as to form one immense forest:

We found some inhabitants, the only ones that we had met with on this coast since our departure from Corea, at the bottom of the bay, by the mouth of a little river abounding in fish.

These people are mild, affable, and, like those of Tchoka, shew no distrust of strangers: they are most scrupulously honest, and manifest but little curiosity or desire to obtain even those articles that would be of the greatest use to them.

In salutation they bend the body forward, and to shew more than ordinary respect, they kneel and bow their head almost so as to touch the ground.

There is but little regularity in the external organization of these people, and they seem to bear no analogy to their opposite neighbours of the Isle of Tchoka, who are separated from them by a strait, in this place not more than ten or twelve leagues across.

These Tartars are inferior to the islanders in height, strength, and regularity of features; their complexion is not quite so dark, and those parts of their skin that are usually covered, are white; their hair on their heads is more thinly scattered, as well as that on their chin and upper lip. These differences in the constitution of the two people seem to point out an essential difference of species, since

they live in the same climate, and there is a striking analogy, or rather scarcely any difference in their manners and modes of life.

The women are ugly, with very little of that characteristic mildness of countenance which usually at first sight distinguishes their sex: they have a flat face, small round eyes, large high cheeks, a great head, well-shaped neck, and the extremities of the body, though small, yet finely proportioned.

The common height of the men is four feet nine or ten inches; the head is enormous compared to the body, the face is almost square, the forehead small, rounded, and depressed below; the eyebrows, which are faintly marked, are black or chestnut coloured, as well as the hair; the eyes are small, and level with the surface of the face; the eyelids so little divided, that when open they wrinkle at the corners; the nose is short, and so imperfect at the root as hardly to be distinguished from the face; the cheeks are large and puffed, the mouth wide, the lips thick, and of a dull red colour; the teeth are small and even, but very subject to decay; the chin nearly flat; the extremities of the body are small, and the muscles but faintly marked. This disproportion of their features and limbs is wholly inconsistent with elegance of form, and beauty of countenance; they are accordingly
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the plainest and most puny race of men that I have seen in either hemisphere. Although these Tartars, as well as the natives of Tchoka, have arrived at a considerably advanced state of civilization and politeness, they are entirely without agriculture, and live in a very dirty manner: their chief food during summer is fresh fish, and in winter smoked fish, or dried on frames similar to those of our tenter-grounds. The whole process of preparing the fish is as follows: their heads are first cut off, they are then split, cleaned, and the back-bone is extracted; they are then hung up to dry, and afterwards packed up in bales, and stowed in magazines, similar to those of Tchoka Island.

Their fishing tackle consists of a hook and line, a net, and a kind of spontoon, or stick pointed with iron.

They have two regular meals in the day, one about noon, and the other at sunset; their utensils and manner of cooking are the same with those of the natives of Tchoka: these articles they procure from Mantchou Tartary, and Japan.

One thing which surprised us was, to behold the avidity with which they devoured the raw skin of fresh fish, as well as the cartilaginous parts of the head: this, with train oil, seems to constitute their most favourite delicacy.

Both men and women are clothed with a vest,

R 2

similar

similar to our carter's frock, which reaches as far as the calf of the leg, and is fastened before with copper buttons. There is no difference between this garment and that of the inhabitants of Tchoka; the materials are fish skin, or nankeen, for summer, and fur for winter. The women adorn the bottom of this gown with rows of flat pieces of copper. They all wear a kind of drawers, or breeches, made in the Chinese fashion, and short boots, like those of the people of Tchoka: they have also a ring of horn or metal, on the thumb, and trinkets hanging from the ears and nostrils.

I was not able to determine whether they acknowledged any chiefs, except the heads of families. The only domestic animals among them are dogs, of the same kind as those of Tchoka, which they employ in winter to draw their sledges.

The custom, which many uncivilized tribes have of presenting their women to strangers, is not practised by these people. They appear to be held in great esteem by their husbands, and are not obliged to perform any outdoor work, their department being the regulation of the domestic economy, such as bringing up the children, preparing the victuals, &c.

The umbilical cord is tied, as among us, immediately upon the birth of the infant, soon after which it is swathed nearly in the American manner, the

the child is laid to sleep in a basket, or case of wood or birch bark.

The rigour of the climate obliges these Tartars to have both summer and winter houses; the form and internal arrangement of which are very similar to the descriptions already given of the habitations in Tchoka. The winter houses are only remarkable in being sunk about four feet below the surface of the ground, and having a porch, or corridor, at the entrance. Notwithstanding their hard and disagreeable manner of life, these people appear to enjoy while young a very good state of health; but as they advance in years, they become subject to inflammation of the *tunica conjunctiva*, which frequently terminates in blindness. The general cause of this disorder appears to be the dazzling of the snow, which covers the ground more than half the year, and the constant irritation of the organs of sight by the smoke, with which their cabins are filled, as they are obliged to keep chiefly within doors during the winter, on account of the cold, and during summer, in order to be freed from the moskettoes, which swarm in myriads in these high latitudes.

Cutaneous disorders are very rare among these people, notwithstanding their extreme want of neatness. I only saw one or two slight cases of rash, and a child, six years old, who had tinea; but I remarked among them no defective organization,

or any trace of the small-pox, or the venereal disease.

The employments of both sexes, their instruments for fishing and hunting, and their canoes, are not remarkably different from those of the people of Tchoka: but the weakness of their constitution must incapacitate them from enduring the same hardships as these last, who are a far more robust race of men.

All these people appear to hold their dead in great veneration, and to employ the whole of their industry and ingenuity in procuring them an honourable burial. They are interred with their clothes on, and the arms and implements that they made use of when alive. The corpse is deposited in a coffin of the same form as ours, the ends of which are ornamented with silk stuffs, either plain, or embroidered with gold or silver. The coffin is then enclosed in a tomb four feet high, constructed of strong planks or barks.

Comparative Table of the inhabitants of Tchoka Island and the Tartars of Baie de Castries, measured in the same manner as is described in the Table of the comparative proportions of Americans.

	Island of Tchoka			Baie de Castries.		
	Feet.	Inches.	Lines.	Feet.	Inches.	Lines.
Ordinary stature of the men - - -	5	0	0	4	10	0
Circumference of the head - - -	1	10	4	1	9	0
Long diameter of Do. - - -	0	9	8	0	9	0
Short diameter of Do. - - -	0	5	8	0	5	4
Length of the upper extremities - - -	2	1	6	2	1	0
Do. of the lower - - -	2	8	0	2	6	0
Do. of the feet - - -	0	9	5	0	9	0
Circumference of the chest - - -	3	2	0	0	0	0
Breadth of Do. - - -	1	1	4	0	11	0
Do. of the shoulders - - -	1	8	0	1	3	0
Circumference of the pelvis - - -	2	6	0	2	3	0
Height of the vertebral column - - -	1	11	0	1	10	0
The only measure of the women that we were able to procure, is the circumference of the pelvis - - -	0	0	0	2	2	10

OBSERVATIONS

By M. de Monneron, Captain of Engineers, and Engineer in Chief in the Expedition of M. de la Pérouse.

ISLAND OF TRINIDAD.

At Sea, Oct. 17, 1785.

THE Island of Trinidad, situate in the southern hemisphere, a hundred and eighty leagues from the

R 4

coast

coast of Brasil, remained uninhabited till the last war, when the English, it is said, took possession of it, doubtless, with the view of converting it into a station, whence they might cruise with success on the French, Spaniards, and Dutch: it was said, that they had abandoned the island at the peace; the intention of M. de la Pérouse was to ascertain the truth of this. A little time after making the island we saw a Portuguese flag on a rising ground, at the head of a small bay on the south-east side of the island.

M. de la Pérouse having hoisted out a boat, ordered me to go and endeavour to survey the post. The officer commanding this expedition was forbidden to disembark, unless he could do it without running any hazard. We came very near the shore, but were unable to land; we had an opportunity, however, of examining at a very little distance this establishment. It is situate about a third of the way up a hill, facing a sand bank that forms a creek in the south-east of the isle: the western side of this little opening is bounded by bluffs of bare rock, which, like the rest of the island, are of volcanic origin: on the eastern side is a broad-based sugar-loaf hill, about three hundred feet high, which adjoins to a kind of table hill, the diameter of which is much more considerable than that of the former, but in height it scarcely equals two thirds of it. There
is

is on the sand bank from forty-five to sixty fathoms depth of water: hence the land rises into a steep and very regular, though natural glacis, at the summit of which is a kind of platform, very sloping on the side next to the sea, and which, to make use of a technical term, I call *terre plein*; the inclination of this is so considerable as hardly to afford a shelter from the fire of a ship at the anchorage. I saw no parapet, though there probably is one in barbet. I looked as narrowly as I could for cannon or batteries, but saw no traces of them. On the *terre plein* were five or six huts, resembling those of the negroes on the sugar plantations; of these one was considerably larger than the rest, and situate near the salient angle of the *terre plein*. This fortification, if such it may be called, resembles a redan, one side of which is parallel to the sand bank, and the other to a ravine, which is the boundary of the glacis in this direction.

This establishment resembles rather a resort of banditti than a post occupied by a civilized nation. Except the natural obstacles which render the approach to this island difficult and dangerous, there is nothing which can make a shadow of resistance: I can also confidently affirm, that there is not a single vessel there of any description; which induces me to think, that the Portuguese have but very lately

ly arrived here, or are very negligent of their establishments*.

M. de Vaujuas, who landed on the island, brought back word to M. de la Pérouse, that he estimated the number of persons there at two hundred. For my own part I reckoned their numbers with great care, repeatedly counting those who came within sight, but I could not make out more than about thirty-three persons on the brow of the hill, and thirty-six who were observing us from the platform: so that the rest of the exiles to this rock had not curiosity enough to come within sight of us. They told M. de Vaujuas, that they were supplied every six months with provision from Rio-Janeiro, and were relieved yearly.

As the bottom of the bay is probably rocky, it might be difficult for ships or frigates to bring their broadsides to bear on the post; but if the place remain in its present situation, I should advise taking a safer anchorage to the south-west, whence, in all likelihood, it would be easy to turn the post, which is on the south-east side of the bay, by mak-

* As the strength of a post depends not only on its situation, but still more on the numbers of its garrison, I inquired of the governor of St. Catherine what was the amount of the Portuguese troops at Trinidad; he replied, that he believed the post was occupied by a detachment of thirty-five or forty men.

ing a lodgment on the crest of the hill, at the bottom of which is the platform that has been spoken of above.

On board the Bouffole, Oct. 25, 1785.

(Signed)

MONNERON.

ISLAND OF ST. CATHERINE.

At anchor, from the 6th to the 19th of Nov. 1785.

The Island of St. Catherine, situate on the coast of Brasil, in $27^{\circ} 41'$ south latitude, is a Portuguese establishment, which for the last seventy years has been very little visited by any other European ships than those belonging to the mother country; there are, therefore, very few particulars of it to be met with in the publications of different travellers; and if the editor of Anson's Voyage found the situation of the colony very different from what it was in the time of Frezier, we can repeat the observation on a comparison of its present state with its former at the period of Anson's visit. A circumstance, that would of course induce a great alteration in its appearance, is the emigration of a great number of families from the Azores, made at the expence of government

vernment during the years 1752, 3, and 4, if I have been correctly informed. This sudden increase of population would necessarily give an entirely new face to the colony; and as these new settlers turn out diligent farmers, and the soil is extremely fertile, population is probably rapidly advancing. The government, like that of all the Portuguese colonies, is purely military.

We are unacquainted with the amount of the force kept on foot here in time of war; but, to judge from the particulars that were published when it was taken possession of by the Spaniards, it should be considerable. These troops, however, made so miserable a defence, that it would have been more to the honour of the Portuguese nation if they had been fewer.

If an enterprise should be planned against this part of Brasil, there might no doubt be found among the archives of Spain accurate documents as to the number of forts, the particular strength of each, and the mutual aid that they are capable of affording to one another.

The Portuguese are in general not remarkable for their skill in connecting military positions; but here my own observations convinced me, that there is hardly any communication at all between their different posts, so that the weakness of the colony is in proportion to the number of the forts: I only
saw

saw three that were worthy of this name, and though built within sight of each other, they seem constructed one to be demolished or stormed on the first attack, and the others to look quietly on, and surrender immediately after. The rules of the art, therefore, demand that these three forts should be reduced to one, that the expences of keeping up the two abandoned and dismantled ones, should be appropriated to the enlargement of the third, and that the three garrisons should be consolidated into one. If instead of three forts there were a dozen, the resistance of the colony would be still less effectual, except the present bad system of defence should be entirely given up*.

The road, which is only exposed to the north-east winds, is sheltered on the east by the Island of St. Catherine, on the west by the continent; and on the south by the isle and continent, which approach so near to each other as to leave between them only a strait not three hundred toises across. Its entrance

* In order that the reader may have an exact idea of the situation of these forts, it may be remarked, that they form nearly an equilateral triangle, the base of which faces the north. That to the east stands on the north-east point of the Island of St. Catherine's, within about a quarter of a league of Parroquet Island: that on the west, which is the most considerable, is on an islet near the continent; and the third is on the largest of the two little islands which are called *los Ratones*.

is incapable of being by any means protected against ships of war of any description. Debarkation is for the most part very practicable along the shore of the road; and a strong current, according to the time chosen for landing, may be a considerable assistance or a troublesome obstacle.

The extent of the road is so great, that though the forts are mounted with cannon of a large calibre, vessels may anchor very commodiously, and in perfect safety, beyond the range of their shot.

The principal fort, which in fact is only a large close battery, is situate on a little isle, of a moderate height above the sea, about three hundred and fifty toises from the main land, and opposite to a rideau much higher than itself. At about a third of the height of the rideau, the fort is so completely commanded as to allow an enemy to observe every thing that is going forwards, and to see from head to foot those who serve the guns. I am persuaded, that from this position the garrison might be annoyed by musketry; but a single mortar, or even a couple of howitzers, which might very easily be dragged up the hill, would be sufficient to command an immediate surrender. In a word, this fort is by no means capable of a regular defence: it has no bomb-proof casemates, for want of which its insular situation is so disadvantageous, that though the garrison was three to one compared with the besiegers, it would be by

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no means difficult to force it to yield at discretion; the situation of this fortress being such as to render it impossible to occupy the height by which it is commanded.

This fort is, however, the post of honour, and would be the head quarters of the general officer who commands in this department; for in time of peace he resides at *N. S. del Destero*, which is a perfectly open town, having no defence except a small battery in barbet on the Island of St. Catherine, at the eastern point of the little strait mentioned above, behind which the town lies. The garrison of the principal fort, at the time of our arrival, was composed of fifty men, ill clothed and badly paid, commanded by a captain.

The general officer, who was in command when the Spaniards, some years ago, made themselves masters of St. Catherine, was not taken in his fort, and was afterwards called before the council of war to answer for his cowardly conduct. But, even if he had shut himself up within the fortifications, I question whether the affair would have turned out better for the Portuguese. The size of the fort was such as to have admitted only a small part of his force, and he would probably have been obliged to capitulate on the first or second day of attack, and to include in his capitulation all who were under his orders, to which they would doubtless have readily acceded.

The

The Portuguese, however, had no other alternative, but that of uselessly attempting to defend their forts, or of taking the field.

I am not sufficiently acquainted with the country, or the respective force of the two powers, to determine whether this conduct would have been attended with any probability of success; it is, however, my opinion, that in consequence of the mutual hatred of the two nations, the colonists would have submitted to the ruin of their plantations by the enemy, and the wasting of their stores by their friends. Very little of the land is cultivated, except in the immediate vicinity of the sea, so that it could not long maintain two hostile armies of licentious pillagers.

It would upon every account be impolitic in France to invade this part of the Portuguese settlement, unless she had views of permanent establishments here, and might hope by a treaty of peace to retain her conquests. This circumstance, however, would infallibly excite the perpetual jealousy of the Spaniards, who prefer the neighbourhood of their natural enemies the Portuguese, to that of their best friends and most faithful allies.

All hostile attempts, therefore, of France in this quarter ought to be confined to a *coup de main*, which might be best effected by cruisers, that should direct their chief efforts against the post
3 occupied

occupied for the convenience of the whale fishery, especially if our intelligence is to be relied upon, that the force of this place continues, even in time of war, on a peace establishment. The probable plunder, however, would scarcely cover the expense of the armament, except the Portuguese should choose to ransom their fishing post, or government should allow a certain sum for the destruction of the vessels and utensils, which are public property, since the Portuguese government grants to a company the exclusive privilege of the whale fishery.

This establishment is at the extremity of the creek called *Bueno Porto*, which forms part of the great road, and where ships may anchor in perfect security from every wind.

On board the *Bouffole*, Dec. 15, 1785.

(Signed)

MONNERON.

C H I L I.

At anchor off Talcaguana, in Conception Road,
from Feb. 14 to March 17, 1786.

Although the family compact existing between the crowns of France and Spain seems to render

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useless

useless any military reflections, which our continuance at Chili gave us an opportunity of making on the political state of that part of the Spanish dominions; yet, as this last mentioned state may probably decay and fall to pieces, it may well happen, that these remarks, though of but little use at present, may at some future period be of great importance. In this memoir it is not so much my intention to display the virtues and vices of the Spanish system of colonial administration, as to point out the force or weakness which result from it.

The kingdom of Chili, situate in South America, is bounded on the west by the South sea; on the east, it touches the governments of Buenos Ayres and Paraguay; on the north it extends to the frontiers of Peru, from which, however, it is separated by vast deserts; and on the south to Patagonia. This extensive country is in several parts cut and crossed by some of the highest mountains in the world.

St. Jago, the capital of Chili, is the residence of the governor and commander in chief; it is situate about thirty leagues from the coast, and its nearest port is Valparayso. This province is subdivided into several governments, and the city of Mocha, distant three short leagues from Talcaguana, is the residence of the military commander of the ancient district of Concepcion, which was destroyed by an earthquake

earthquake in 1751. At the time of our arrival, Don Ambrosio Higuins, camp-major of this department, was occupied in concluding a treaty of peace with the Indians bordering upon those who are called the Friendly Indians, but who, notwithstanding this appellation, had been persuaded into a war by the Indians of the Cordilleras, who are the bravest and most warlike of any of the tribes of South America. The military manœuvres of an able commander would consist in taking a position between his allies and his enemies, so as to hinder the progress of disaffection, and thus have fewer enemies to combat; but notwithstanding the wisdom of the Spanish measures, the unconquerable spirit of the Indians of the Cordilleras, the continual revolts of the allied Indians, and the frequent insurrections of those who are called subjects, are causes so powerful, and so constantly in action, as greatly to enfeeble, and perhaps unexpectedly to destroy the Spanish power in Chili. Consequently every expedition fitted out in Europe against the province of Chili, which shall not have for its object that which I shall soon specify, will not only fail to cover its expences, but will inevitably be attended with immense loss.

It ought to be kept constantly in mind, that the general spirit, which appears to influence the Spanish colonies, is prevalent in Chili, and that

the colonists are either farmers or inconsiderable retail merchants; so that although Chili produces in fact a great quantity of gold, very little of it would fall into the hands of an invader, but he would find abundance of provision, such as bread, wine, butcher's meat, &c. He could, indeed, only avail himself of these resources while he continued on shore. The force that could be brought into the field to oppose the landing of an enemy is so inconsiderable, as hardly to deserve notice, and a debarkation in the road of Conception, which is one of the best in Chili, might be effected in any part of it without opposition, except from two or three batteries, the principal of which is upon the beach, and the rest might easily be turned by a small body of troops which could be pushed on shore out of the reach of their shot. The object of these batteries is not to hinder an invasion, but merely to protect the merchant ships which trade between Chili and Peru, against the enterprises of pirates, who might otherwise make prize of them while at anchor off Talcahuana, not a cable's length from the shore. A landing upon the beach of Conception bay might therefore, probably, be completed without running any risk, either of men or ships: thence a small number of regular troops might easily reach Mocha, which, as I have already observed, is only three short leagues from Talcahuana, and the line of march would be
through

through a large sandy plain, not admitting of any opposition being made till within a third of a league of that city, which is situate on a plain still lower than the first, and a quarter of a league from the river Biobio. The richest citizens of this town have no moveables of any value, and at first sight it would be evidently an excessive inhumanity to demand any contribution. The whole advantages, then, of a descent conducted in this manner, would be confined to an incursion of three leagues, and it would be advisable for the enemy to lose no time in regaining his ships, for in a few days the camp-major would find himself at the head of an army of fifteen thousand men, and, however small his military talents might be, if he have the least spark of honour, it would be impossible to force him to a capitulation: he would easily surround an enemy in the open field, and harass them by a body of cavalry far more numerous than the whole body of troops that could be sent from Europe on such an expedition: his superior acquaintance with the passes would render an attempt to seize the heights scarcely practicable, so that the wisest, or rather the only conduct to pursue would be to retreat. But one of the most certain methods of bringing on the ruin of the Spanish interest in Chili is to form alliances with the Araucos and Taucaapel Indians: these would soon be joined by the Cordilleras; and those whom

the Spaniards call friends and allies would without delay enter into the confederacy. By the assistance of European officers, and European arms, this league would become so formidable to the Spaniards, as to induce them, for fear of their lives, not to await the ruin of their establishments, and the devastation of their settlements, but to abandon every thing, and retire to Peru.

It will readily be perceived, that this idea is capable of great extension, and that it requires an acquaintance with a variety of circumstances; but the period when it may be of use to France is so distant, that it is sufficient at present merely to point it out.

On board the Bouffole, March 30, 1786.

(Signed)

MONNERON.

EASTER

E A S T E R I S L A N D.

At anchor in Cook's Bay. Latitude $27^{\circ} 11'$,
Longitude west of Paris $111^{\circ} 55' 30''$.

This island, from its position, at a distance from all the common tracks of navigators, from its absolute privation of wood and water, and from the manners of its inhabitants, who are very eager to receive, but are incapable of any return; though it may offer an extensive field for the speculations of naturalists and moralists, cannot in any degree interest the different maritime powers of Europe.

On board the Bouffole, April 12, 1786.

(Signed)

MONNERON.

S A N D W I C H I S L A N D S.

At anchor. May 29, 1786. Latitude $20^{\circ} 34'$,
Longitude west of Paris $158^{\circ} 25'$.

If I had to compose a memoir on the advantage
of the position of these islands under various points

of view, I should be under the necessity of looking for documents in the account of Cook's third voyage; but though the utility of such discussion was demonstrated, it is evident that it would be carried on to greater advantage at Paris, than on the open sea.

On board the Bouffole, June 5, 1786.

(Signed)

MONNERON.

BAIE DES FRANÇAIS.

Situate on the north western coast of America, latitude $58^{\circ} 38'$. At anchor in different parts of the Bay, from July 2 to Aug. 1, 1786.

The impossibility, in my opinion, of establishing to any good purpose a French factory in this bay, would render all discussion of the subject embarrassing on my part; I have therefore learned with great satisfaction, from a memoir which M. de la Pérouse has had the goodness to communicate to me, that he has dissuaded government from any such settlement, at least till the period of his return to France. I shall then be ready to produce the documents necessary for the discussion of this matter more at large; and if it should be an object worthy the attention of government, it will be
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very easy to demonstrate its advantages and inconveniencies.

The inclemency of its climate, and its few resources, its prodigious distance from the metropolis, the competition of the Russians and Spaniards, who are much more favourably situate for the commerce of these regions, ought to dissuade every other European power from forming any establishment from Monterey to Prince William's Sound. Besides, it would be necessary first of all, at least before the formation of an establishment, to estimate the expences and profits, and the number of persons to be employed. The knowledge of these circumstances is essential to the safety of the adventurers, and the stores to be entrusted to them, both against the natives of the country and the enemies of the commerce of France.

On board the Bouffole, Dec. 19, 1785.

(Signed)

MONNERON.

HARBOUR

HARBOUR OF MONTEREY.

Situate on the north-west coast of America, latitude $36^{\circ} 38'$. At anchor, from September 15 to 24, 1786.

There will probably elapse one or two generations, before the Spanish establishments, situate to the north of the Peninsula of California, will attract the notice of the great maritime powers of Europe. The present possessors will not for a long time to come found colonies there capable of making any great progress. Their zeal, however, for the propagation of the faith has already appointed several missions; but in other respects they are of so little importance, that even privateers will not think it worth their while to disturb the pious exercises of these ecclesiastics.

With the view, doubtless, of favouring the presidency of Monterey, the galleon, for several years past, on its return from Manilla to Acapulco has been obliged to put into this port. There is, however, so little occasion for coming to anchor here, that even in times of peace this vessel frequently prefers to proceed on its voyage without stopping, and pay a certain sum by way of indemnification.

In time of war the commander of the galleon would with more certainty avoid this route, if the Spaniards imagined, that any of the enemy's cruizers were off this port.

The land in the neighbourhood of Monterey, though dry, appears capable of being cultivated to great advantage, of which we had proofs in the goodness and abundance of European vegetables which are raised there. Butcher's meat is also of an excellent quality. It is therefore certain, that from the convenience of the harbour, if this settlement should ever become flourishing, it would prove as good a place of refreshment as any in the world for European vessels; but it will be time enough to enter upon political speculations with regard to this harbour, when the Europeans established on the north-east of this continent shall have extended their settlements to the north-west coast; an event that is not likely to be very soon accomplished.

On board the Bouffole, Dec. 24, 1786.

(Signed)

MONNERON.

MEMOIRS

M E M O I R S

CONCERNING MANILLA AND FORMOSA,

By M. de la Pérouse.

MANILLA.

IN that part of my journal relative to Manilla, I have endeavoured to explain my ideas respecting the new company, which has just been established in Spain; but it will demand a particular memoir, to shew the great ease, with which this colony might be taken possession of by an enemy. The Spanish possessions in the Philippines are confined to the single island of Luconia, which is indeed very considerable, and contains about nine hundred thousand inhabitants well skilled in trade and agriculture. These people detest the Spaniards, by whom they are grievously oppressed and despised; and I am persuaded, that any nation, that should furnish them with arms, might readily excite an insurrection in the island. The only tie, which still attaches them to their conquerors, is that of religion. The greater number of the natives of Luconia are very orthodox and enthusiastic Christians; so that no nation could firmly establish itself in this island, except it respected their churches, their priests, and, in short, every thing relating to their religious worship; and this might be done with the greater safety, as most of the parishes are at present supplied by Indian priests,

priests, who in their hearts bear the same hatred to the Spaniards, as glows in the breasts of the rest of their countrymen.

The bay of Manilla is open to every kind of vessel, and can only be defended by shipping; so that in any expedition against this colony, there must be a decided superiority of naval force.

The fortifications of the place, though regular, and kept in good repair, could only retard a few days the capture of the town, which has no chance of relief from Europe or elsewhere.

The garrison is composed of a single mulatto regiment, a corps of artillery of two hundred men, and a hundred and fifty dragoons; but these are only American troops: and though the Spaniards affect to believe, that these may be compared to the soldiers of Europe, I am so fully persuaded of the contrary, that with fifteen hundred regulars I should not scruple to become personally responsible for a victory over twice their number.

The militia of the island may form a body of eight thousand men, and keep the field, as they did during the war of 1760, after the English had made themselves masters of the town of Manilla: but circumstances are very different at present, and it would be easy to oppose the rest of the island against that part of it which should declare for the Spaniards; if, indeed, it were not far more probable, that the militia would refuse to march, especially if means could

could be found to gain over some of the Indian priests, and persuade them that the invaders were as good Catholics as the Spaniards.

In short, the conquest of Manilla appears to me so easy and certain, with a superiority at sea, and a land force of five thousand men, that I should greatly prefer this expedition to one against Formosa, and I think that I could certainly answer for its success. But the Spaniards are rather to be considered as good and faithful allies than as enemies; and I ought rather to shew, that this colony can be of no use in a war upon the continent of India, placed as it is in the Chinese seas, that can only be navigated with the monsoons. It is impossible, that the commander of a French squadron should ever think of refitting here, for the Isle of France, which, on account of its great distance from India, is in general so detrimental to military expeditions, would be a hundred times more advantageous.

The little commerce carried on at Manilla would render it almost impossible to procure any supplies of provision, because the inhabitants cultivate only a quantity just sufficient for their own consumption. It might, however, be possible, to obtain a few cargoes of rice, some cordage of the country, which is, however, very inferior to that of Europe, and a few masts; but it would be absolutely necessary to convey these articles in our own vessels, and not to
imagine,

imagine, that they would be sent from Manilla on a simple order; and as the Chinese seas are only navigable in the direction of the monsoons, it will be necessary to foresee at a great distance of time all the stores that would be wanted, beside keeping in mind, that the vessels on their passage from Manilla would have to pursue a track, which would be very likely to be infested by enemies; on which account, it would be absolutely necessary to detach a convoy for their protection.

I am of opinion, to take an example from the last war, that the armament of M. de Suffrein was of the greatest advantage to the colony of Manilla, because it occupied the whole force of the enemy, and hindered them from undertaking any expedition; and that Manilla, on the contrary, could have been of no service to him, except by a loan of piamres: but as these are not a production of the country, they must have been sent for from Mexico, the government of which makes a point of never sending more than is sufficient for the most urgent wants of the colony.

It is computed, that the whole island of Luconia contains no more than twelve hundred Creolian or European Spaniards; and it is remarkable, that not a single Spanish family has lasted four generations; whereas the population of the natives has increased since the conquest, because this country does not,

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like America, contain those destructive metals, the mines of which have swallowed up several millions of men in every generation. A small quantity of gold is indeed found in this island among the sand of the rivers, but the labour of collecting it is by no means equal to that of common labourers. The Spanish sovereignty in the southern Philippine Islands is little more than nominal, similar to that of the king of Sardinia over Cyprus and Jerusalem, or of the king of England over France. They have, indeed, a few presidencies in Mindanao and the neighbouring islands, but their limits are not more extensive than those of Oran and Ceuta, on the coast of Africa.

FORMOSA.

If you have been able to devote a few moments to the perusal of that part of my journal relative to Manila, and my voyage to the coast of Formosa, you will have seen, that I anchored before the capital of that island, opposite to the old fort of Zealand; but the sand banks, which border the whole of the coast, did not allow our vessels to approach nearer the place than a league and a quarter. I did not choose to send a boat on shore, without being able to protect it by the cannon of the ship, lest it should be detained, on account of the war which then existed between
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the colony and its metropolis. M. d'Entrecasteaux had detached the *Sylphide* to Manilla, to desire me to navigate with circumspection to the north of China, as the slightest alarm on the part of the Chinese might be injurious to negotiations which he had in charge. I must confess, that I was not much influenced by this motive, being convinced that more is to be obtained from the Chinese by fear, than by any other means; but I knew, that in sending a boat on shore at Taywan, the most fortunate circumstance would only be the procuring of some fresh provision; and even if the officer were allowed to land, his total ignorance of the Chinese language would hinder him from gaining any intelligence. On this account I did not think it worth while to hazard a boat: I, however, made it my business to inquire, both in China and at Manilla, several particulars concerning Formosa; and I think that I am fully justified in asserting, that two frigates, four corvettes, five or six gun-boats, together with transports for four thousand men, and their requisite stores, would ensure the success of this expedition. A smaller force would not be employed by a prudent commander, though perhaps twelve or fifteen hundred men might be sufficient to those enterprising leaders, who, having nothing to lose, trust every thing to the event of war, without considering how humiliating it is for a great nation to be defeated by a people much its inferior in courage, arms, and

military science; but, in my opinion, far superior to the mean opinion which is generally entertained of them by Europeans. The empire of China is so vast, that there is probably a great difference between the inhabitants of its northern and southern provinces. These last are very cowardly, and as the Europeans are only acquainted with Canton and its vicinity, they have with reason entertained a very light opinion of the military talents of the Chinese; but the inhabitants of the north, the Tartars, who conquered China, ought not to be confounded with that contemptible populace, with whom alone the Europeans have intercourse: however, though much superior to the southern Chinese, they are not, I think, to be compared even with our worst troops; they are not so inferior indeed in courage as in their mode of fighting.

The Chinese, who attach great importance to their establishments in Formosa, keep up a garrison in that island of ten thousand Tartars: I reckon very little of their artillery, their forts, and even the posts in which they have entrenched themselves; but an enterprise of so great importance as this ought not to be undertaken without an almost absolute certainty of success. The Formosan coast is flat, so that it can only be approached by small vessels: gun-boats, therefore, drawing seven or eight feet of water, would be absolutely necessary to cover a descent. The first operation should be
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to take possession of the Pescadore Islands, where there is an excellent harbour, and the channel which separates them from Formosa may be readily crossed in five or six hours: the proper time for this undertaking would be in the month of April, May, or June, for in July and August the Chinese seas are exposed to a dreadful kind of hurricane, called the *tiphon*.

If this expedition were planned in concert with the Spaniards, the harbour of Manilla would greatly contribute to ensure success, because from this port the southern part of Formosa is at all times easily accessible, and provision and stores might be procured from the Philippines, if the loss of vessels, or any unexpected resistance, might render supplies necessary.

The island of Formosa is of great importance, and a nation which should obtain possession of it, and get a firm footing there, by the establishment of a strong garrison, and a squadron of men of war at the Pescadore islands, would obtain from the fear of the Chinese every thing that it might choose to demand. I am persuaded, that, if the English had not been engaged in different wars, which have demanded all their force, they would already have made this conquest, which is of more consequence to them than to any other nation, because their general use of tea has in a manner rendered them tributary to China, as this leaf is now become an article of

the first necessity in the British islands. I should not be surprised to see, in a short time, these Europeans reduced in China to the same conditions that the Dutch are in Japan. Such an event would be of little importance to France and the rest of Europe, whose trade with China is not worth any such humiliations; but the English would be driven to the necessity of submitting or declaring war against them; the latter of which they would doubtless prefer.

It is sufficiently well known in Europe, that the eastern part of Formosa is inhabited by the natives, who do not acknowledge the sovereignty of the Chinese; but the western part is extremely populous, because the Chinese, oppressed and harassed in their native country, are always ready to emigrate. I have been informed, that the settlers, who have gone over to this island since its conquest by the Chinese, amount to five hundred thousand, and that the chief town contains fifty thousand inhabitants: as these are laborious and industrious, their numbers would be of no disadvantage to the conquerors. But it ought not to be forgotten, that these people, naturally mutinous, would require a greater force to retain them in obedience than to conquer them; and if, after having taken possession of the island, the keeping up and recruiting a garrison of three or four thousand men, at such a great distance from
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the mother country, should be neglected, there would be great danger of a general massacre.

The productions of this island would, probably, in time, defray the costs of its establishment; but the first years would be very expensive, and a minister would see with regret considerable sums remitted to this part of Asia without the hope of immediate profit. The trade with China would at first be interrupted; but, in my opinion, it would soon be resumed with greater spirit than before, because permission might be gained to visit the ports of the province of Fokien, the coast of which forms one side of the channel of Formosa; whence might be obtained the articles of Chinese commerce, especially the most important, tea, which is chiefly consumed in England, Holland, and the United States of America.

I may therefore, I think, conclude this memoir, by ensuring the possibility of conquering Formosa by the above-mentioned means, especially if we were in alliance or assisted by the Spanish in Manilla; but it is not equally clear to me, whether such a conquest would be of any essential advantage to France, and it would be far better never to have conquered this country, than to allow so important an acquisition to fall to decay.

In the harbour of St. Peter and St. Paul, Sept. 10, 1787.

(Signed)

MONNERON.

T 3

MEMOIR

MEMOIR

ON TEREBRATULÆ, OR POULETTES,

(Anomia of Linn.)

With the description of a species found in the seas of Eastern Tartary; by M. de Lamanon, Member of the Academy of Turin, and Correspondent of the Academy of Sciences.

PETRIFIED Terebratulæ, or Anomiæ, have been long known, and it was imagined that this kind of shell no longer existed in the sea: this was, however, a mistake.

The anomia is an inhabitant of every region, and has existed in every age, having been contemporary with those shells, the race of which is at present annihilated, and which peopled the waters of the antient world: it has survived them; and after having escaped the astonishing revolutions of the globe, which have destroyed by far the greatest number of the fish, and the testaceous and crustaceous animals, it has seen those ancient species succeeded by new ones, formed in our present sea. The fossil anomia is found in the mountains of every country, and most frequently among the remains of the *belemnites*, the

cornua

cornua Ammonis, the *hysterolithes*, and other inhabitants of the ancient ocean.

The living anomia is found among the shells of late formation in both hemispheres.

Aldrovandus, under the name of chamea, has given the figure of a true anomia fished up from the sea. He wrote as was customary at the end of the sixteenth century. It was not till the year 1748 that we became acquainted with fossil anomia, Volsterdorf being, I believe, the first who mentioned it in his *Système Minéral*, printed in that year. The learned translator of Lehman says in a note (book iii, page 382) that M. de Jussieu shewed him a shell similar to the anomia, which had been found in the sea near Marseilles. M. de Bois-jourdain of Paris, and Mr. Schmidt of Berne, have been mentioned as each possessing in their rich cabinets a specimen of an anomia. M. Joubert gave a description a few years ago in the *Mémoires de l'Académie*, of the *te-rebratulæ* found in the sea near Montpellier. These are in general smaller than the fossil ones. I have some in my cabinet, which come from the sea near Malta, as large as those that are found imbedded in the mountains; I have also seen other specimens in the cabinet of natural history belonging to the university of Turin, which were fished up from the sea at Nice. They are also found at Leghorn, and M. de Luc was in possession of one more than twenty-five years ago: "It is," says he, "of

a different species from that which is commonly found fossil," (*Lettres sur l'Histoire de la Terre et de l'Homme*, first letter, page 238). They are also natives of the Adriatic sea; the ab. Fortis, who discovered them there, says, that they keep at the depth of about two hundred feet in the neighbourhood of the harbour of Siberico; and that they are also found at a still greater depth in the caverns whence coral is procured. This species of terebratula has both its shells convex; it is lightly waved in the direction of its length and breadth: it is considered by him as a new species, and he adds, that it considerably resembles the fossil terebratula described by baron von Hupfch, of which he has given a figure (plate iv, no. 16 and 17). That from Mahon was first known a few years ago at Paris, as well as those which are natives of the Indian ocean, of which one species has a smooth shell and another a striated one. They have also been met with in the Norwegian seas, and M. de Bougainville fished one up in the straits of Magellan.

Fossil anomia have been found in a great number of places, and the varieties that they present are also very numerous. I have collected in my travels near thirty species, the last of which I found on the north-west coast of North America at Port des Français. On comparing the fossil terebratulæ with the living ones, I met with several perfectly similar. There are, however, marine ones, which

which have not yet been discovered petrified, as well as many petrified ones which have no analogy to those hitherto found in the sea.

I have found small terebratulæ on the muscles, which were drawn up, adhering to the fishing lines on board the Bouffole, near Baie de Ternai, from a depth of about thirty-five fathoms; and sixty-two leagues further to the north, near Baie de Suffren, several, both great and small, were caught by the Bouffole and Astrolabe. M. de la Pérouse having ordered the drag to be let down, in order to know whether there were upon these shores any pearl oysters, procured a kind of pectinated oyster, which I shall describe hereafter, and many terebratulæ of different ages. As this fish forms a genus by itself, I thought it right to give it a careful examination, and describe not only its shell, but the animal which inhabits it. This is a work that has never yet been executed, for the description of two terebratulæ, published by M. Pallas, was taken from imperfect specimens, as I shall have occasion to shew: the explanation of the technical terms which I shall be obliged to make use of may be found in the excellent work of M. Adanson, on the shell-fish of Senegal,

ANOMIA OF THE COAST OF TARTARY.

Description of the Shell.

The length of this shell varies from six to twenty lines, and its breadth from five to eighteen; there are, however, considerable varieties of proportion between different individuals, besides those arising from the different ages of the animal. It would be improper, therefore, to distinguish the various species of anomia by the proportion of their shells. The waving lines on the edges of the shell are equally defective, as distinctive characters, for I have observed in the same species the shell approaching or receding indifferently from the circular form; and, in some, the edges of the valves are on the same plane, whereas in others, one of the valves forms a salient angle in the middle of its curve, and the other a re-entering angle.

Nature of the Shell.

The shell is of a moderate thickness, about that of a common muscle; it is somewhat transparent, convex like the cockle: neither of the shells is more sensibly arched than the other; that, however, which
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has the spur, is rather the most so, especially in the superior part.

Striæ.

On the surface of the shell are seen a number of slight transverse depressions, of a semicircular waved form, which reach the part where the shell ceases to be circular, in order to form the angle which supports the summit.

Periosteum.

The striæ are covered with a very thin and slightly-adhering periosteum; in some specimens there are from one to three shallow broad depressions, radiating insensibly from the centre of the shell, and becoming more marked as they approach the edges, where they form with the corresponding parts of the other shell those salient and re-entering angles of which I have just spoken. The periosteum is rather more firmly fixed on the latter angles than on the former.

Shells.

The shells are equal in the rounded part of their edge, and close very exactly; however, towards the summit, the spur of one of the shells reaches

7 considerably

considerably beyond the other shell, consequently they are unequal as in oysters.

Summit.

The spur, or summit, is formed by the folding from within of the edge of the shell, and the elongation of its upper part. The folded edges form an oval aperture of a moderate size, through which the animal extends the muscle, by means of which it attaches itself to other substances. This shell is not, therefore, perforated, as its name of terebratula would seem to imply, the opening not being worked in one of the shells, but formed by the elongation of one shell, the folding in of its edges, and the approach of the other shell. The summit is not pointed, but round.

Ligament.

The ligament, as in the oyster, is placed between the summits, and does not appear on the outside; it adapts itself to the pedicle of the animal. As the summit takes up a considerable part of the shell, the valves are only capable of opening a very little without running the risk of being broken. It is very firm, though slender, and not easily to be discovered, being fixed in a small groove, which is filled up when the shell is shut by the corresponding
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part of the opposite shell. This ligament preserves its texture, even for a considerable time after the shell is emptied and become dry.

Hinge.

Oysters are without a hinge, the teeth which form it in many other shells not existing in them. The anomia has been considered as an oyster, because its hinge or teeth have not been examined: they are not visible indeed in the fossil specimens; but in opening them when alive, the teeth composing the hinge are sufficiently visible, being even much larger than in the greater part of bivalve shells. The fossil terebratulæ are almost always found with their shells closed, whereas the other bivalves have usually theirs either open or separated: the reason of this seems to arise from the nature of the hinge, that of the anomia not allowing it to separate, and the ligament, which is very tight, contributing to keep the two shells united. The teeth which form the hinge of the anomia approach very near to those of the *spondyle*, described by M. Adanson. In this last they are formed by two rounded projections, and in the anomia by the same a little elongated. It is above these teeth that the ligament is placed in the larger shell: there are between it and the teeth two cavities, one on each side, which serve to receive the teeth of the other valve.

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The teeth of the larger shell have, besides, a slight projection, which fits into a longitudinal furrow in the other shell in front of the teeth.

Nacre, or Mother of Pearl.

The substance which covers the inside of the shell holds, as in oysters, a middle place between *nacre* and the interior substance of shells, which are destitute of it. The degree of its lustre, polish, and thickness, varies with the age and circumstances of individuals.

Colour.

The colour of the teeth is always white, that of the outer surface of the shell verges more or less to the ochry red, especially on the border. The inside has also a very slight tint of this colour, on a varying greyish-white ground.

Tendons.

Under this head we shall only consider the position of the tendons, and their impression on the shell. The description of the tendon itself belongs to that of the animal. There is visible on each shell of the present species the impression of two very distinct tendons, a circumstance which forms an essential

essential difference between this genus and that of the oyster: this latter having only one tendon arising from the middle of the body. The impressions of the tendon in the largest shell are oblong, situate near the summit, and hollowed; each of them has curved transverse ridges, divided into two parts by a longitudinal furrow, representing the wings of certain insects. In the other valve the insertions have a different form; their situation is the same, but they are very irregularly rounded and encompassed by two sulcations, which are separated from each other by an intervening ridge, and then are continued in a right line towards the opening of the shell as far as about two thirds of its length.

That part of the summit of the shell along which the pedicle of the animal passes, is longitudinally striated in the larger shell, of which the middle stria is the deepest: the longitudinal striæ are divided into equal parts by a transverse depression. There are no similar marks on the other shell. The shells of the anomia have within a very delicate part, which is peculiar to them, and which some authors have taken notice of under the name of *tongue* or *fork*, because they have never seen them entire: it serves as a support to the body of the animal, and I shall describe it when speaking of its use.

DESCRIPTION

DESCRIPTION OF THE ANIMAL.

The anatomy of shell-fish is very delicate, and offers insurmountable difficulties. The labours of Rhedi, Reaumur, and Swammerdam, still leave much to be desired on the subject. They confess, in their immortal works, that most frequently they were obliged to have recourse to conjecture. In the animals that inhabit shells, and especially in the bivalves, there are several parts still to discover, and others already known, the use of which is not yet ascertained. There are new comparisons to be instituted of the generic, specific, and individual differences, so that this study still offers a vast field for investigation.

I expected to have made some discoveries of this kind by the anatomy of the animal which inhabits the *pecten maximus* (great scallop), and all the parts of which would be very distinct: I saw several of these shells in the Philippines; but the province which furnishes them was unfortunately too far from the port of Cavite, where we anchored. I shall not undertake to give the complete anatomy of this anomia, but, after the example of Mr. Adanson, I shall notice the best known parts, and those which sufficiently characterise the genus.

Manteau

Manteau and Trachea:

The *manteau* of the anomia of Baie de Suffren is formed of a very fine membrane, lining the inside of both shells, and containing the body of the animal. Its origin is of the same breadth as the hinge of the shell, whence it divides into two lobes, lining both the shells: it forms, therefore, only a single aperture, terminating at each end of the hinge, and of the same breadth with the interior surface of the shell: it appears to have only one trachea, which is formed by the two lobes of the manteau. Mr. Pallas did not recognize the manteau in the two varieties which he describes, calling it very improperly periostrum: its imperfect state, in the dried individuals that he examined, doubtless drew him into this error.

Muscles.

After having opened the shell, I divided the ligament as delicately as possible, and unfixed the hinge: having then detached from the larger shell the lobe of the manteau, I turned it over the body of the animal. This operation exposed to view the large muscles which adhered to the shell; they are soft, membranous, and, as it were, fleshy on the inside, being covered with small sanguiferous glands. From

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the lower part of each muscle there proceeds a pretty strong tendon, which reaches to the extremity of the manteau; they run parallel to the edge of the shell, and at a considerable distance from each other; and are each enclosed in a sort of flattened sac, of the shape of a ribbon, which is filled with a red viscid matter. It appears, that the place of insertion of the muscles, as well as the muscles themselves, which extend along the lobe of the manteau, furnish real blood, which is contained in three small fleshy red glandular bodies of unequal size, which are visible after having taken off the muscles; perhaps these constitute the heart of the animal. The anatomy of shell-fish is not sufficiently advanced to enable me to decide upon it, but it is nevertheless certain, that, in the anomia, those muscles which are attached to the larger shell are lined with fleshy particles, which contain much blood, as well as the two other muscles which arise from the same place, and which contribute to form the pedicle, of which I shall soon speak.

The muscles which are inserted into the other shell are also divided into several parts: some are seen extending along the corresponding lobe of the manteau; many others rise up in a kind of tuft, which is fixed into the shell above: some again subdivide into such minute ramifications as not to allow of tracing their course, even with the assistance of a microscope; but others, more apparent, contribute

to the formation of the pedicle which passes through the opening left between the two shells, is connected to each of them by several fibres, and fixes itself to some external body, principally to other bivalves. The muscles of the anomia have, therefore, three attachments, namely, to the inner surface of each shell, and to some external body.

Pedicle.

The form of the pedicle is cylindrical, being enclosed in a muscular substance, which contains several fibres: it is from a line to a line and a half long, and two thirds in diameter. I am unacquainted with the reason of its adhering so forcibly to different substances, as that the animal, and all the muscles which contribute to the formation of the pedicle, may easier be torn through than the pedicle detached from the place of its adhesion. The glutinous substance which connects them to each other, resists even the heat of boiling water. It is by means of this pedicle that the animal raises its shell so as to be, while in the water, in a position inclined to the horizon. The smallest valve is always the lowest, being that upon which the animal rests; the superior one being the larger, and serving as a covering. It is, therefore, improper to call, as is usually done, the smaller of the two the upper shell. This error arises from considering only the position of oysters,

which is the reverse of that of the anomia. Has this animal the power of loco-motion, or does it always remain fixed to the place of its birth? In order to give a satisfactory answer to this question, it would be necessary to make minute and frequent examination. I have, nevertheless, some reasons for thinking, that they are capable of changing their place, though they very seldom do it in the course of their lives. Having detached several pedicles with a sharp knife, I observed, particularly in the larger ones, that they were fixed in a small depression that they had formed in the shell to which they adhered. This circumstance, and the forcible adherence of the pedicle to the shell on which it is fixed, prove, that the terebratula continues for a length of time in the same place; but I have met with several clusters of small anomia, which were so close, that they could not grow larger without incommoding each other, for a single middle-sized terebratula occupies the place of five or six small ones.

Ears.

After raising the lobe of the manteau I observed the ears. They are large, composed of two membranaceous laminae on each side, of which the superior is the narrower. These laminae are connected to each other by a thin membrane, so as to form

form only a single pouch. They have on their edges long fringes, which hang loose upon the manteau; but a very remarkable circumstance is, that their ears are supported by little bones like those of fish. I shall give a more particular description of them after having described the soft parts. The form of the ears is that of an arch; they are separated from each other on their lower part, where the fringes are the longest, so that the two ears on one side are perfectly distinct from those on the other side. The commencement of the ears is at the teeth of the hinge.

Mouth, Œsophagus, and Stomach.

Between the ears are situate the stomach, œsophagus, and mouth, the whole forming a triangle of which the mouth is the base. It is placed at the side of the hinge, and consists of a large transverse opening without lips or jaw-bone. The œsophagus is very short, but is capable of elongation when the animal opens its mouth. The stomach, which is of the shape of a pointed sac, is connected by a membrane to the bones of the ear. On opening the stomach, I found a small shrimp half digested. It is not easy to conceive how these shrimps, which are very active, and have good eyes, should suffer themselves to be caught by a blind animal, which can hardly open its own shell, and is fixed immove-

ably to another. Animals, especially the aquatic ones, have means, of which we are ignorant, to enable them to fulfil their vital functions, and these means, once known, may conduce by fortunate applications to the progress of the arts.

Intestines and Anus.

At the bottom of the stomach is seen the intestine, of which, it is, as it were, a continuation. It is extremely short, not exceeding half a line in a shell fifteen lines across, and is composed of a very slender membrane. The excrements are discharged upon the lobes of the manteau, but they are easily thrown out by the motions of the two lobes. It is very probable, that the excrements of the terebratula serve as food to the shrimps, and other little animals upon which it feeds. The position of the anus, at the opening of the shell, and that of the mouth, in the further part of it, confirm this conjecture.

Small Bones of the Ears.

The little bones of the ears which I have discovered in the terebratula have not hitherto been observed in any of the testaceous animals, whence the terebratulæ approach nearer to fish than the inhabitants of any other shells. In the anomia which are preserved in cabinets, there is found only a very small
portion

portion of these bones, whence they have obtained the improper appellations of *tongue* or *fork*, which indicate only the form of the fragments, and not their use.

The small bones of the ears are composed of several pieces, the principal of which is of an oval form; it springs from the side of the hinge, of which it appears to be a continuation, thence it extends about two-thirds of the breadth of the shell, where it is reflected, and rests against the upper part of the fork, to the branches of which it is united by a simple superposition, a kind of articulation very common among the numerous small bones that compose the heads of fish. The fork extends from the summit a little more than one-third of the breadth of the shell: it is formed by a pivot which divides into two long and pointed branches; these are remarkably brittle, and support, as I have already said, the extremities of the bones of the larger ears. The lamina, which composes a second set of ears, rests upon a curved bone, which on one side is attached to the inferior internal part of the bone of the larger ears, and on the other reaches to the side of the mouth of the animal, where it is united to another flat little bone which is applied to a similar bone on the other side. These last little bones are exactly below the membrane which forms the mouth. I am ignorant of their use, though I presume that the animal employs them to open and close the stomach at pleasure, by

extending or contracting the skin at its orifice. All these bones are flat, very brittle, and surrounded with fibres and membranes. By their articulations the ears are enabled to move; they also support the body of the animal, which touches neither of the shells, but remains between them as upon treffels. The space between the branches of the bones of the ears is filled up with a transparent firm membrane; at the base of the fork is a similar one, and a perpendicular partition dividing the space occupied by the body of the animal from the rest of the shell. There are two orifices in this membrane communicating with the space between the two lobes of the manteau, and which serves as a trachea, for we have remarked, in the description of the manteau, that the two lobes are entirely separated from each other, and therefore do not form a real trachea.

From this description it follows, that the anomia ought to be separated from the genus oyster, since it has a toothed hinge, several ligaments, and an interior organization wholly different; neither ought it to be confounded with the cockle, the shells of which are both equal, and are destitute of any sensible periosteum, without reckoning other differences. It has still less analogy with the other bivalves, and therefore ought to constitute a peculiar genus, the species of which, both fossil and living, are very numerous.

Explanation

Explanation of the Plate of the Shells.

- Fig. 1. Anomia of a middle size, taken from its inferior surface.—A, the hole through which the muscular pedicle passes.
- Fig. 2. View of the superior surface of the same.
- Fig. 3. Side view of a small anomia.
- Fig. 4. View of the other side of the same.
- Fig. 5. Front view of an anomia of middle size.
- Fig. 6. Natural position of the shell in the water.
- Fig. 7. View of the shell which has the claw.—A, impression of the muscles on the inside of the shell.
- Fig. 8. Inferior shell.—A, impression of the muscles.
- Fig. 9. View of the internal structure.—A A, laminæ of the superior ears—B B, laminæ of the inferior—C, the stomach—D, the anus—E E, the manteau—F, the œsophagus.
- Fig. 10. A A, the muscular pedicle passing through the opening of the upper shell.
- Fig. 11. View of the little bones of the ears.—A, the fork—B B B, bones of the larger ears—C C C, the lower shell—D D, small bones below the œsophagus—E E, points of the fork—F F, bones of the superior ears—G G, teeth of the hinge, to which are connected the small bones of the ears—H, place of the pedicle.—I I, the fringes of the ears.

M E M O I R

ON THE CORNUA AMMONIS,

Together with the Description of a Species found in the South Sea between the Tropics; by M. de Lamanon.

OF all the genera of animal remains, that have been found buried in the ancient beds of the sea, that of the cornua ammonis is unquestionably the most abundant and most universally diffused. Many authors reckon more than three hundred varieties of them, and probably, there yet remain many to be discovered. They have been found from half a line and less in circumference, to ten feet. Some naturalists, on the authority of Linnæus, assert, that cornua ammonis, similar to all the varieties of fossil ones, are yet to be found alive in the depth of the sea, and therefore call them pelagian shells. The majority however of naturalists, not satisfied with this assertion, look upon the cornua ammonis as a genus of shells, which are no longer met with except in a fossil state. Several authors have described microscopical cornua ammonis discovered among the sand of the sea, but almost all these, when accurately examined, appear to be only nautili.

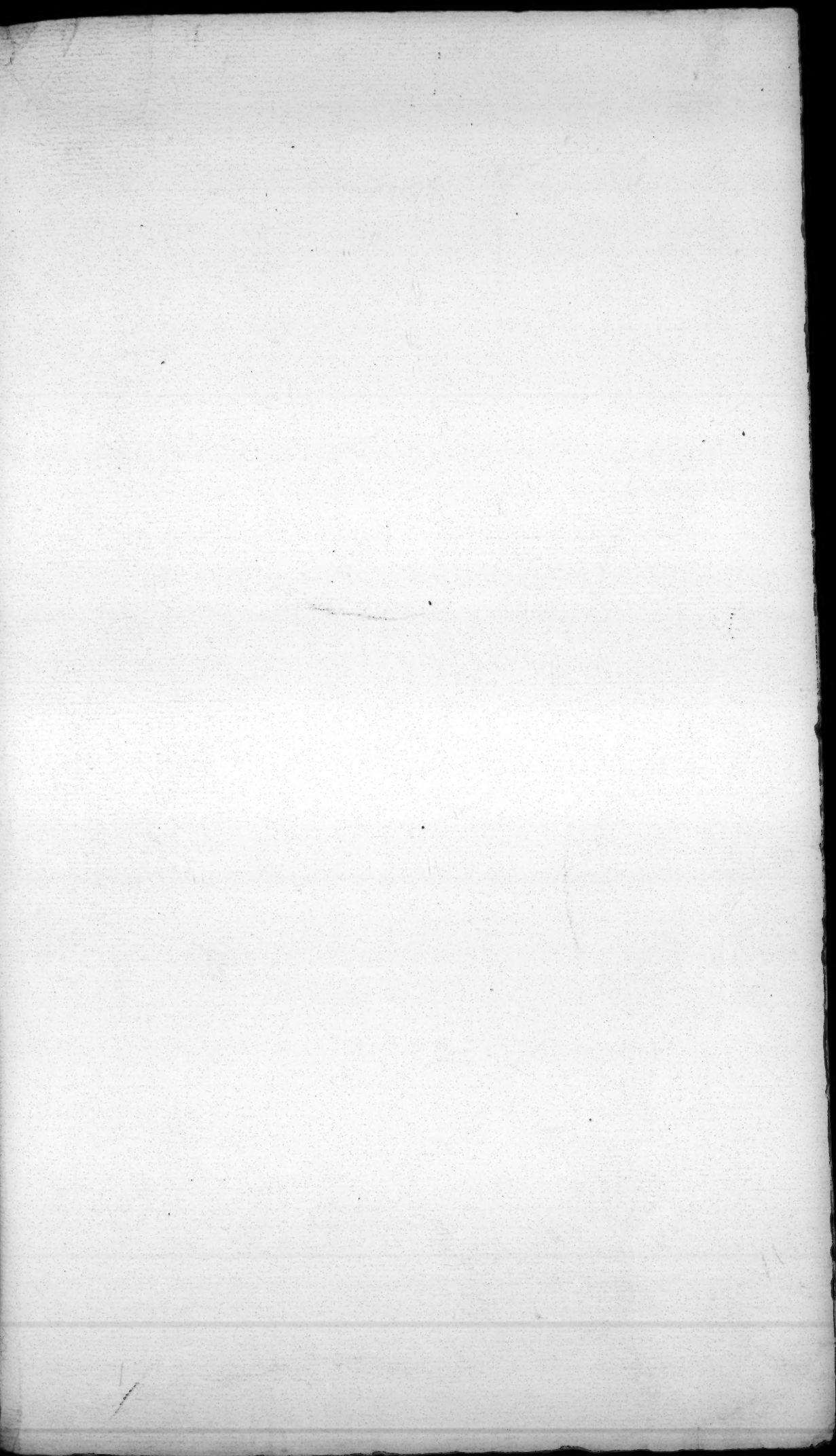
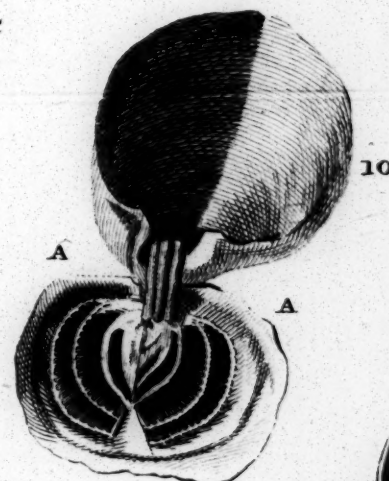
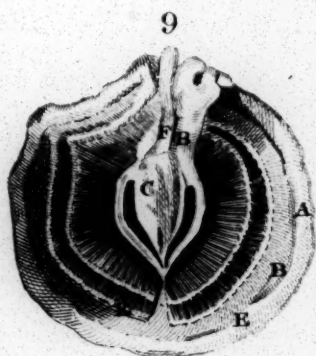
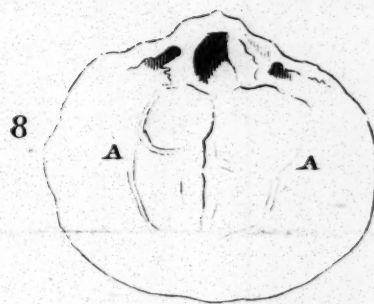
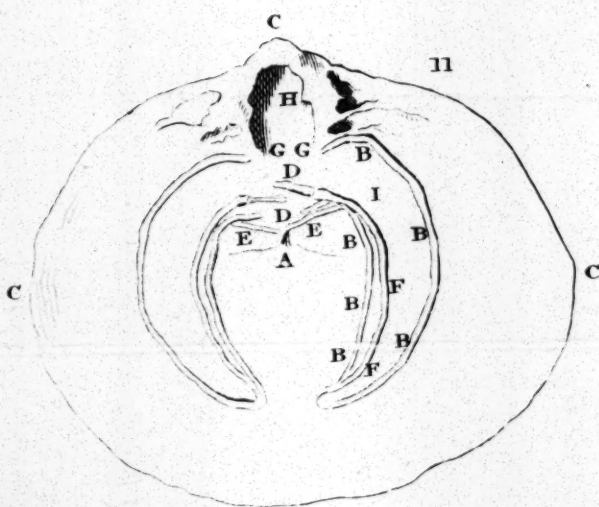
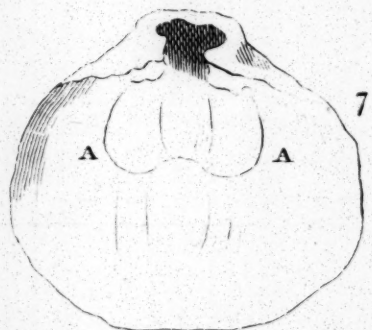
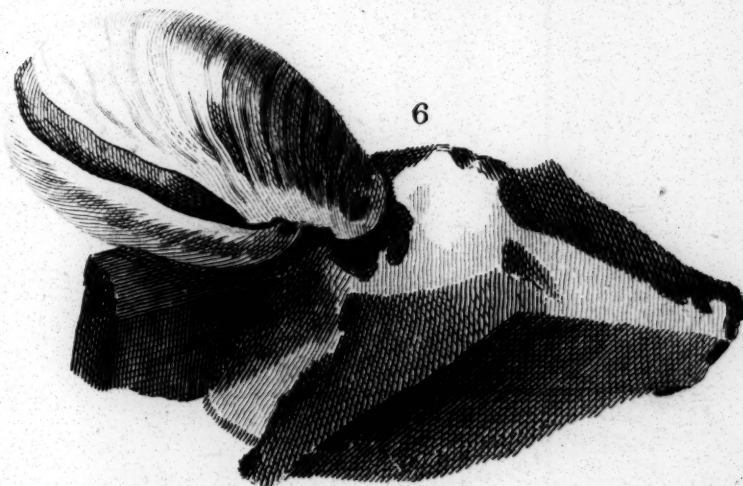
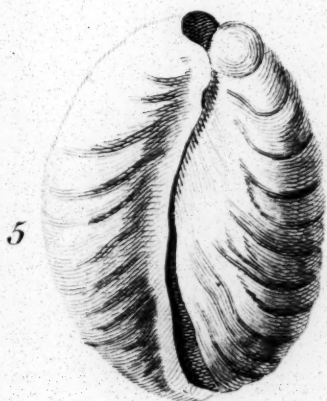
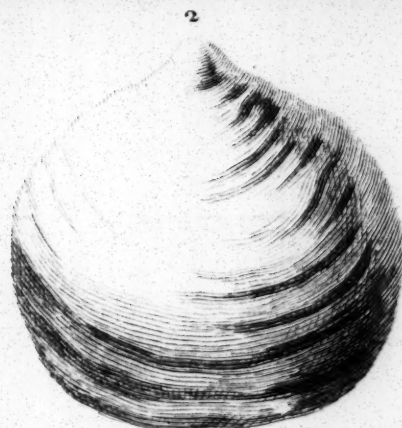
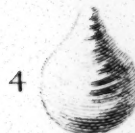
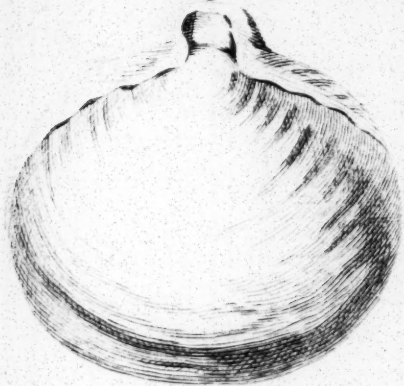


Fig. 1.



Terebratulæ or Poulettes (Anomia of Linnæus)

tili. With regard to those that Hoffman was said to have discovered in Norway, he himself afterwards acknowledged, that they were not *cornua ammonis*, but *orthoceratites*. I am persuaded there are still in the sea living *cornua ammonis*, but in very small number, and materially different from the fossil ones. These last ought to be considered as a race formerly the most numerous of all, the descendants of which either no longer exist, or are reduced to a few degenerated individuals.

The most gratuitous hypothesis is commonly the most difficult to overthrow; on this account I suppose scarcely any arguments have been adduced against the existence of the pelagian shells, though it is an idea that has generally been rejected. The following observations are to me sufficient proof of the falsehood of this hypothesis.

The shells of the fossil *cornua ammonis* are very light and thin; whereas the shells of those animals that live in very deep water are always thick and ponderous: besides, the form of the fossil *cornua ammonis* points out to us, in some measure, the organization of the animal which inhabited it. The celebrated Jussieu proved, in 1721, that there existed a very close analogy between the ammonite and nautilus*. It is well known that the nautilus,

* There are, however, some striking internal differences: first, the partitions in the shell of the nautilus are more curved than those of the ammonite: secondly, the ammonite wants the small hole which communicates from one cell to the other.

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by filling or emptying a part of its shell, has the power of remaining stationary in any depth it pleases; the same was doubtless the case with the ammonite; and if this species still abounds in the sea, it would surely be occasionally discovered by sailors.

The waves also would throw fragments of it on the shore; fishermen might sometimes entangle it in their nets; or, at least, there would be fragments sticking to the lead of the sounding line when ascertaining great depths. It may also be added, that if the ammonites never quitted the abyss of the sea, those which are found petrified would not be constantly met with on the same level, and in the same bed, as those shell fish that only inhabit the shallows. There are, however, found in Normandy, Provence, Touraine, and a multitude of other places, ammonites mixed with turbines, buccina (whelks), and other littoral shells. They are found, besides, at every degree of elevation from below the level of the sea to the summits of the highest mountains. Analogy also leads us to suppose, that Nature, who has given eyes to the nautilus, has not refused them to the ammonite; now what use could these be of if they remained confined to those depths which the light is unable to penetrate?

The extinction of the ancient race of ammonites is therefore an established fact, which no rational supposition can destroy; and this fact is undoubtedly the most surprising of any, that is presented to us in
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the history of aquatic animals. The discovery of a few living species of *cornua ammonis* does not destroy the truth of this, for these ammonites are very different from those which are found petrified: they are extremely rare, and cannot be looked up to as the representatives of the old ammonites, so varied in their species, and the number of which in the ancient ocean was probably far more considerable than that of all the other shells besides.

Wallerius, speaking of the petrified ammonites, says, that they belong to that class of shells, which are divided into several separate compartments, communicating by a pipe. It is, however, certain, that there are ammonites without these cells. Authors have considered the ammonite as a species of *nautilus*, and in each there are shells both with and without partitions.

Every univalve shell, rolled in a spiral, so as that a horizontal plane will divide it into two equal parts, formed of united spirals, and bearing a certain proportion to each other, is an ammonite. The volutes of St. Hubert are not ammonites, because their spires are disunited: the orthoceratites cannot be *cornua ammonis*, because their spires are not on a horizontal plane so as to divide the shell into two equal parts; for an attentive observer will see, that the spires, though convex on the upper side, are always flattened at the base. The planorbes, which considerably resemble the ammonites without

cells, differ from them in the proportion of their spires, for the first is much narrower than the others. Certain planorbes have a considerable external resemblance to the ammonites with cells, whereas the external appearance of the ammonites without cells differs essentially from them. The nautili differ from the ammonites in their spire being interior; they return into the shell after the first circumvolution, whereas the spires of the ammonite are all without.

I thought it absolutely necessary to ascertain the precise meaning of the term ammonite, previous to describing that which I found during our voyage round the world. The form of this is almost orbicular, the long diameter being to the short one as three lines to two lines and three quarters. The first spire is by far the largest, occupying nearly half of the longitudinal diameter. The summit is placed at the distance of about two-thirds of this diameter; it is terminated on the right-side by a very small knob visible only through a magnifier, thus differing from the ammonite of Rimini, which besides, is microscopical and celled, the inside of this which we are now speaking of being entirely plain. The number of spiral circumvolutions is four and a half; they are equally convex on both sides, and are fixed on a plane, dividing the shell into two equal parts: there is on each side a kind of boss formed by the increase of the perpendicular diameter of the spires,

spires, in proportion as they recede from the centre. The surface is smooth, the back is armed with a flat, even, brittle crest, as thin as paper, surrounding it on every side like a ruff; it is about half a line broad, extends over the summit of the spires, and serves to join them together. The mouth of the shell is nearly triangular; its edges project in the form of lips, and are rounded at the border. I have often found this ammonite enclosed in the stomach of the bonetta, (*Scomber pelamis* Linn. 170, 2.) caught in the South Sea, between the tropics, where no bottom was found with a line of more than two hundred fathoms. These shells were covered with a black clayey mud: their size varies from one to four lines across; they are consequently the largest living ammonites that have yet been discovered. The animal being partly digested, did not allow me an opportunity of examining it minutely.

Explanation of the Figures.

Fig. 1. Cornu ammonis of the natural size.

Fig. 2. Form of the mouth.

Fig. 3 and 4. The same magnified.

M E M O I R

ON THE TRADE FOR SEA-OTTER SKINS, &c.

It ought not to be forgotten, that the advancement of geography was not the sole end of government in fitting out at so great an expence the frigates *Bouffole* and *Astrolabe*, and that it was incumbent on the commander of the expedition, to inform the ministry of any commercial advantages, that might be obtained from the countries which we have visited.

The American coast, from Mount St. Elias to Monterey, offers to the speculations of our merchants a variety of furs, especially those of the sea-otter, which have a certain and ready sale in China. This fur, so highly valued in Asia, is found in America, along an extent of twelve hundred leagues of coast; being more common and more widely spread than seals themselves are upon the coasts of Labrador. Whatever be the size of the empire of China, it appears to me impossible, that the otter skins should keep up their high price there, while a competition exists of this commodity between the different nations of Europe; and since the mine, if
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we may be permitted to make use of this term, is so abundant, that several cargoes may be procured in one year, even if the privilege of each nation be confined to an extent of coast of about five degrees, and terminating about thirty leagues to the north of port San Francisco, which is the most remote Spanish establishment. The publication of Coxe furnishes numerous details with regard to the trade in furs that the Russians carry on with the Chinese, and it may be considered as at least twice as important as it was in the year 1777, from the data which he has given; and I doubt not that the Russian factors extend their traffic at present to Cook's River, and soon will push it as far as Prince William's Sound*. It would be of great importance to the political object of my voyage, to know with the same precision the nature of the Spanish establishments to the south. These two nations extend their traffic in this line from Kamtschatka to California, but at the time of my departure we were still ignorant in France of the boundaries of the climate most favourable to the multiplication of the sea-otter, as well as the limits of the Spanish settlements, and the share which that nation proposed to take in the fur-trade of China. We perhaps flattered ourselves, that Spanish indolence would long

* I shall endeavour to verify this conjecture at Kamtschatka.

leave materials for the activity of other nations; and, indeed, it must be confessed, that the plan of the viceroy of Mexico, to reserve to government the exclusive trade of otter-skins, is very likely to realize these expectations.

I was unable to acquire the necessary information without touching at Monterey, for it is well known, that, for a long time past, the Spaniards have published nothing; the policy of this government being to keep secret all its transactions in America. The English have had the address to procure lately a copy of the journal of a pilot called Maurelle, which they have published: without this assistance we should not even have known, that there existed missions at Monterey; but this journal, which is little else than a table of the course of a small corvette from Port San Blas to Los Remedios, in the 57th degree, gave us no other particulars, and the Spaniards at that period imagined, that the fur of the sea-otter was of no more value than that of the rabbit. The pilot Maurelle, therefore, does not even mention the existence of this animal, and probably he confounded it with the seal. His countrymen, at the present day, are better acquainted with the subject. They know, that in the northern provinces of China, there is a great demand for otter-skins, that the winter clothing of all the mandarines of the highest order, and all the rich people of that empire, is composed of them; and that this,
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of all the objects of luxury, is probably that which most eagerly excites their desire, because, to the fineness and lustre of its appearance, it unites the advantage of being a very warm clothing, and therefore preferable to any other.

I shall not repeat in this memoir the different particulars * which I have inserted in my journal, and which, I think, might be made public without any impropriety; but I shall consider whether it would be of advantage to the French nation to establish a factory in Port des Français, of which we have taken possession; an establishment of which no government will have a right to complain: or whether France ought to confine itself to the licensing of private expeditions thither: or lastly, whether the commerce ought to be entirely prohibited to our merchants.

As I wrote this memoir in our passage from Monterey to China, I had not acquired all the information necessary to the complete solution of the proposed inquiry, because that depends much on the demand at China, and particularly from the fall in price, which must be the result of the importation of ten thousand otter-skins, which the presidency of Monterey is able to furnish every year, even supposing that they do not procure a much

* The knowledge of these particulars is absolutely necessary to understand this memoir. (*Fr. Ed.*)

greater quantity from their new establishments to the north of Port des Français.

We procured by barter at Port des Français about a thousand otter skins, a number sufficient to enable us to know their exact price at China; but hardly any of these skins were whole, for the northern Indians, not being assured of a sale, are in the habit of making them up into articles of their own clothing: we therefore obtained them in small pieces, dirty, stinking, and torn; and, in short, in such a condition, that I can hardly believe them to be of any great value in China, though the editor of Cook's third voyage affirms, that the whole of their scraps were readily saleable. It is evident, that if we had an agent on the north-west coast of America, or even a regular annual commerce thither, the Indians would soon bring to our market only entire skins, especially if those which had been at all worn were absolutely refused.

I am certain that it would have been extremely easy to obtain by barter five or six thousand skins by putting into five or six different bays between Port des Français and Los Remedios, and thus employing the whole season; but, convinced that the ships of government ought to protect commerce, and not carry on trade themselves, I did not even for a moment give way to the idea. The quantity that we have, was procured in eight or ten days at Port des Français. It is

more than sufficient for our purpose, and I would not have given up the least object of public utility for a thousand skins more; but it was absolutely necessary to procure a certain number, in order to ascertain their value, and to make our merchants acquainted with the probable returns of such speculations*.

I have reflected a good deal on the scheme of establishing a factory in Port des Français, or the neighbourhood, and it appears to me subject to serious objections, on account of its immense distance from Europe, and the uncertainty of the commercial returns from China, since there will be a competition in these skins, which are so easily procured along the whole coast, between the Spaniards, Russians, English, and French. Besides, it is certain,

* The profits of this venture will be shared among the sailors, as a compensation for their dangers and fatigues. I observed with the greatest satisfaction, that all the officers and passengers agreed with me, that it would be a kind of sacrilege to mingle any interested view with the motives that determined us to make this voyage. I have nominated M. Dufresne supercargo for the sailors: I shall submit to the inspection of the minister his accounts, and the shares we have divided, as well as the amount of the share of each individual; and if the sum should prove to be considerable, it will, I doubt not, joined to what they will receive from government, induce the greater part of them to marry, and their families, being thus in easy circumstances for their situation in life, will multiply, and prove hereafter of great use to the navy.

that our East India Company will object to the privilege, which it will be necessary to grant to the adventurers, of taking their goods to a Chinese market; the expence of the equipment too would be so considerable, that the mere sale of furs would not be sufficient to indemnify a company like that of Hudson's Bay, if their ships were obliged to return to Europe in ballast; and it would be absolutely necessary, that they should be freighted back by the East India Company, at a price of tonnage agreed upon in Europe, as well as to allow them interest for the value of their furs, and to make use of them in the purchase of its cargoes.

But these different regulations are subject to great inconveniencies; the two companies would unquestionably be at constant variance, and their agents would not agree better. Besides I am certain, that, if they were united, one of the two parties would be reduced to inactivity, and this would certainly be the fur traders. These exclusive privileges destroy commerce, as large trees overgrow and stifle the shrubs below them.

Although the Russians are to the north, and the Spaniards to the south, several ages will probably elapse before these nations meet, and there will remain in the mean time intermediate points which may be occupied by other nations, without exciting the jealousy of any one, if governments were not in general more suspicious than individuals. Spain
would

would doubtless regard it as an usurpation if a few acres of land were occupied by the French, though, at the same time, they might not be able to discover the factory for many years, if its latitude and longitude were kept secret; but this would be too inconsiderable an advantage, to run the risk of the slightest altercation on its account between the cabinets of Versailles and Madrid; and even supposing the Spanish court should agree to such an establishment, it would first be advisable to gain some acquaintance with this branch of commerce by a few private expeditions, in order to know whether it be firmly established as far as regards China. It would be by no means advisable to grant the trade to an exclusive company, but merely to allow a privilege to some commercial town of sending three expeditions of two ships annually, which should set sail at the same period, so that it would be possible to receive intelligence of the first expedition at the time when the third was commencing its voyage. The equipment would be expensive, because the vessels should be strongly built, amply provided with sails, cables, and cordage of every sort, and commanded by experienced captains. No other voyage being comparable to this, as to the length and difficulty of the navigation, it would not be right to expose to the seas of Cape Horn and North America vessels of less than four or five hundred tons burden. They might, indeed, if it

were absolutely necessary, be rather smaller, if their only object were to bring back furs in exchange for the articles they took out; but it ought to be observed, that the expence of the outfit of a ship of three hundred tons does not materially differ from that of one of five hundred, because they will each require a good captain and the same number of officers: the chief difference, therefore, will be in seven or eight sailors, more or less; and as I go upon the supposition that the East India Company would be required to freight back these vessels on its own account, it would be a material object to the owners to receive the freightage money for five hundred rather than for three hundred tons.

Therefore, judging from the various particulars that have been touched upon in this memoir, I think that it is as yet much too early to think of establishing a factory, or even of constituting an exclusive company for this trade; that it ought to be still less trusted to the East India Company, which would either execute it very ill or not at all, so as to disgust government with the scheme. But it might be proper to engage one of our ports to fit out three expeditions, insuring them a freight back from China, as I have before mentioned. I can take upon myself to assure government, that traders will be able to procure by barter a great quantity of otter skins, in the space between Nootka Sound and Baie des Français. They ought, however,

to be cautious of entering any bays except such as they can easily get out of again, because the more places they touch at the more advantageous will be their barter. The skins which may be procured the first year will be soiled, and of an inferior quality, but those of succeeding years will probably be in better condition. The best article of barter will be bar-iron, about four fingers broad, and six or eight lines thick, some common iron hatchets, and large blue or red beads. The cost of such a cargo will add very little to the expence of the equipment*.

The chart which I have sent to the minister of marine, will be sufficient for their purpose. It is exact, and much superior to others that have been made in the same circumstances that we were. The great danger in this navigation arises from the currents; it is therefore of importance to shun the narrow harbours where they run with great rapidity. With this precaution, I doubt not that the traders will be able to procure a great quantity of furs, especially if they avoid all occasion of quarrelling with the natives, laying it down as a maxim not to reclaim the articles of which they may be robbed, if of no great value.

These are the only particulars, that I have yet

* It would be of advantage to take on board a few barrels of charcoal, together with a forge, and a smith capable of giving the bar of iron any form that the Indians may wish.
been

been able to procure relative to this commerce. All the principles of my reasoning are founded upon my observations in America, for I have not hitherto made any in China. On this head I shall be better informed on my departure from Macao, and I shall be in possession of every fact on the subject after having visited Kamtschatka*.

At sea during the passage from Monterey to Macao, Dec. 1786.

(Signed)

LA PÉROUSE.

* The particulars with which captain Cook has furnished us relative to the fur trade, and the enormous profits which have attended the first speculations of this kind, will of course excite the avidity of merchant adventurers. It is easy, however, to foresee, that competition will cause a great fall in the price of furs at China; and, on the other hand, from the number of traders, the Indians will become more extravagant in their demands.

Since Cook's last voyage the English have made several expeditions to the north-west coast of America, of which the results have been made public.—Such of our readers, as may desire more particulars upon this subject, should refer to Meares's voyage, and that of Dixon, and compare them with Pérouse, and the information contained in the last voyage of Cook. (Fr. Ed.)

S T A T E

OF THE

OTTER AND BEAVER SKINS

Procured in Port des Français, on the North-West Coast of America, by the Frigates Bouffole and Astrolabe.

OTTERS.

THE otter skins were divided into three lots; namely, the entire skins, the fur upon slips of woollen cloth, (or *ponchos*), and edgings, or very narrow bandages. The first lot was divided into three qualities; the first, consisting of virgin skins, or those the fur of which is clean and of an uniform colour; the second consists of those that are a little damaged, but still fine; the third consists of such as are soiled, mixed, and therefore only fit to be fulled or felted by the hat-maker. It would, I think, be advantageous to bring a great part of these to France, in order to submit them to different experiments.

The entire otter skins, those upon the slips of woollen cloth, and the beaver skins, were all reduced to square feet, and estimated, piece by piece, according

according to different modes of valuation. The edgings were also sorted according to their different degrees of fineness and shades of colour, and valued very low, according to the price of calabar skins in France. The furs of the first quality were sorted into eleven divisions, and valued according to their size, at different prices. The articles forming each division were estimated at three different prices, deduced from Coxe's account of the Russian discoveries, from the voyages of captain Cook, and the information that we ourselves received at Monterey. The first price is the lowest at which, I imagine, the skins can be sold; the second is the medium price according to the Spaniards of Monterey; the third has been determined from captain Cook's voyages. The first division, from the smallest size to that of two feet inclusively, has been estimated for the lowest price at five piastras the square foot; an entire skin of six square feet, which is one of the largest size, being worth thirty piastras. For the Monterey price, at seven piastras and a half, being forty-five piastras for the whole skin. For the price according to Cook, at ten piastras, being sixty piastras for the whole skin. This latter price, however, appears to be extravagant, and only set on to leave room enough for abatement. This method has been followed in all the other divisions.

BEAVERS,

BEAVERS.

It appears from the account of furs exported by the English from Hudson's Bay to Petersburg, and by the Russians to Kiatcha, that the beaver of Hudson's Bay is worth at Kiatcha, from 7 to 20 roubles the skin (the rouble estimated at 4 livres, 10 sous).

The lowest price, of 7 roubles, makes 31 livres, 10 sous, for each skin.

I have estimated the beaver skins according to their common measure of 18 by 20 inches, or $2\frac{1}{2}$ square feet.

The lowest price for the square foot is half a piastre, making from 6 to 7 livres the skin.

The second price is 1 piastre, making from 13 to 24 livres the skin.

The highest price is two piastrs, making from 26 to 30 livres the skin.

From these data the following calculations result: 3231 skins of every size and quality, being the whole of what we procured, have been estimated as the lowest price, at 41,063 $\frac{1}{8}$ piastrs, or 221,740 livres, 17 sous, 6 deniers, French money; as the medium price of Monterey, at 63,586 $\frac{2}{3}$ piastrs, or 343,365 livres, 15 sous, French money; and lastly, at the price mentioned by Cook, at 84,151 piastrs, or 454,415 livres, 8 sous, French money.

EXTRACTS

From the Correspondence of Messieurs de la Pérouse, de Langle, and Lamanon, with the Minister of the Marine.

M. DE LA PÉROUSE.

SIR,

Monterey, September 17, 1786.

OUR ships have been received by the Spaniards like those of their own nation; and every sort of succour has been lavishly bestowed upon us. The religious belonging to the missions have sent us a very considerable quantity of all kinds of provision; and we have presented them, for the use of their Indians, with an infinite number of little articles, which we took on board at Brest for that purpose, and which they will, no doubt, find highly useful.

You know, sir, that Monterey is not a colony; it is only a post of about twenty Spaniards, maintained by the king of Spain for the protection of the missionaries, who labour with the greatest success in the conversion of the savages. This new system will never be reproached with any of the acts of cruelty that disgraced the age of Christopher Columbus,

Columbus, and the reign of Ferdinand and Isabella.

Our biscuit is a little decayed; but our corn, our meat, our wine, &c. have kept beyond our hopes, and have contributed not a little to the health of our crews. Our ships are in excellent condition; but they sail exceedingly ill.

M. DE LA PÉROUSE.

Monterey, September 19, 1786.

SIR,

As my dispatches are to be carried over-land across America, and are to pass through the city of Mexico, I can neither venture to send you by this conveyance the details of our voyage, nor the plans we have taken, nor the number of exact observations which we have collected, and which enable us to give you the best information concerning the fur trade, and the part meant to be taken in it by the Spanish nation.

They have their eyes constantly fixed upon that important article of commerce, the purchase of which the king reserves to himself in all the *présidios* of California. The most northern of the Spanish factories furnishes ten thousand sea-otter skins yearly; and if they continue to be sold advantageously in China, it will be easy for Spain to procure as many

as fifty thousand, and by that means to give a mortal blow to the trade of the Russians at Canton*.

Sea-otters begin to be found on the coast of California in the 28° of latitude. They are there as plentiful as in the north, but of an inferior quality.

On the coast of America we have made discoveries, which have escaped former navigators, and we have taken possession of a post very fit for the establishment of a factory. A hundred men might defend it against a considerable force.

Sea-otters are found there also in such abundance, that we purchased a thousand skins in a fortnight. They will be sold in China for the benefit of the sailors only. All the officers and scientific men are of opinion, that glory alone can compensate the hardships and dangers of a voyage like ours.

That part of the coast which lies between 50° and 55° of north latitude, and which was not seen by Cook, will also be very interesting in our narrative. We have made important discoveries; but the particulars cannot be communicated to you in cipher. They will be dispatched to you from China, with the notes relative to the political and secret object of my instructions concerning the trade to be carried on upon the coast of America.

* This is probably an error. Kiatcha, on the frontiers of the two empires, is the emporium of the Russian trade with China, and is the place where they sell their furs at so high a price. T.

M. DE LA PÉROUSE.

SIR,

Monterey, September 19, 1786.

I have already had the honour to inform you, that, while following my orders in every particular, I thought it proper to avail myself of the permission given me to change the plan of my instructions, and to begin by the north-west coast of America. I will be bold to say, that my mode of proceeding has been attended with the greatest success. In the space of fourteen months we have doubled Cape Horn, and run to the extremity of America, as far as Mount St. Elias. After exploring that coast with the greatest care, we arrived at Monterey on the 15th of September. The king of Spain's orders had preceded us thither; and it would have been impossible, in our own colonies, to meet with a better reception.

I have also to inform you, sir, that we have put into the different islands of the South Sea that had excited curiosity and that we have run five hundred leagues from east to west in the parallel of the Sandwich Islands, in order to clear up several very important points of geography. I anchored for twenty-four hours only at the island of Mowee, and passed through a channel which the English had no opportunity of visiting.

VOL. III.

Y

I shall

I shall be at Kamtschatka at the beginning of August, and at the Aleutian Islands at the end of the same month. I have thought proper to defer the exploring of those islands till after my visit to Kamtschatka, in order to know what the Russians have not done, and to add something to their discoveries.

From the Aleutian Islands I shall sail, without losing a moment, to the southern hemisphere, in order to execute the orders given me. I will venture to say, that the plan of no voyage was ever equal to ours. We have already passed a year under sail, and have nevertheless seen, during the short intervals we have passed in port, things equally novel and interesting. You will hear with pleasure, sir, that we have not yet had a single person sick on board of the *Bouffole*, or shed a single drop of Indian blood. The *Astrolabe* has lost one man, a servant, who died of a consumption, that would have carried him off had he remained in France. We should certainly be the luckiest of navigators, but for the severe misfortune we have met with*. I spare my feelings the pain of relating it here, and I request you to permit me to address to you an extract from my journal, begging you, sir, to have the goodness to send copies to the families of the officers who perished so unfortunately. I lost on that fatal day

* *At Port des Français.* T.

the only relation I had in the navy. Of all those who have navigated with me, he was the young man that showed the greatest turn for his profession. He stood me in the stead of a son, and his death affected me more than any other event of my life. Messieurs de la Borde, de Pierrevert, and de Flanagan, were also officers of great merit.

Our misfortunes have obliged me to make use of the lieutenant's commission that remained undisposed of in favour of M. Broudou, my wife's brother, who embarked as a volunteer, and with whose conduct I am highly satisfied. I have dated the commission from the 1st of August, 1786. I have also given M. Darbaud an order to act as ensign. He is a young officer much distinguished by his talents.

All the officers, men of science, and artists, enjoy the best state of health, and fulfil their functions with the greatest ability.

M. DE LANGLE.

SIR,

Monterey, September 22, 1786.

I can add nothing to the detail of our navigation communicated to you by M. de la Pérouse, because, since our departure from Brest, I have never lost sight of his ship for a single moment.

H

Y 2

Destined

Destined to follow his fate, I have shared in his misfortunes: Messieurs la Borde-Marchainville, La Borde-Boutervilliers, and Flasseau, perished on the 13th of July 1786. An excess of courage and humanity occasioned their death. They finished their career at the moment when able to render signal services to the state. The first two especially, animated by the zeal, perseverance, and curiosity, that are requisite to finish a voyage such as that we have begun, had all the talents necessary to extricate themselves from the most difficult situations: in a word, I lose in them two friends, whose advice has often been of the greatest assistance to me. This misfortune has not damped the ardour of the five officers that remain on board the *Astrolabe*. Their duty, which is always more laborious in harbour than at sea, does not discourage them. The good understanding they keep up with one another, and the lively interest they take in the success of the voyage, are the safeguard of my ship; while the curiosity that animates them prevents their bestowing a thought on their return to France.

M. de Monti is an excellent seaman, and a pattern of good sense, foresight, and firmness of mind.

M. de Vaujuas unites with those qualities a very uncommon portion of information and understanding.

M. Daigremont, who has now a great deal of experience in sea affairs, is bold and enterprising.

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He does not disappoint the hopes that are generally entertained of a sprightly and dissipated youth. He is now approaching the age of maturity, which will enable him to serve with distinction, because he possesses judgment, and a firm temper of mind.

M. de Blondela, an officer of great sense, patience, and assiduity, is perfectly master of his business. He employs his leisure hours in drawing plans, and in making very pleasing and curious designs. On the 13th of July, M. de la Pérouse gave him an order to do the duty of captain of a fire-ship. I beg you will be pleased to grant him that rank, of which I think he is highly deserving.

M. de Lauriston, whom M. de la Pérouse has promoted to the rank of ensign, is a young man of particular merit, who has acquired a great knowledge of sea affairs. He is also indefatigable in taking observations, and I place the most entire dependence upon him in that branch of the service. As ardently desirous of making discoveries as his brother officers, he cares no more than they do about his return to France.

I have also the greatest reason to commend the social qualities of M. de Lesseps, of M. de la Martinière, of Father Receveur, and of M. Dufresne.

The loss of the four best soldiers, and of three excellent seamen of my ship's company, has produced no discouragement among the rest of the crew. I consequently promised, after the event of

the 13th of July, a gratification of two months pay.

Francis Lamare, my boatswain, is a very deserving man. . . . If he continue to conduct himself as he has done till now, I shall give him, in the course of the voyage, the commission of *entretenu* *, which was sent me for that purpose.

My boatswain certainly deserves this recompense; but being aware that it would create jealousy, I have thought it incumbent on me to promise Mathurin Leon, my first pilot, Robert Marie le Gal, my carpenter, and John Francis Paul, my caulker, that I would entreat you in the most urgent manner to fix the date of their subsistence (*entretien*); I will also request of you to advance the term of that of John Grosset, who, although younger than the others, is their equal in capacity and understanding. It appears to me, that I owe to these promises the harmony that prevails on board my ship; and it is to the example set by these warrant officers, that I attribute the gaiety and alacrity of my ship's company.

Gaulin, master at arms, doing the duty of gunner, is also a man of merit. The means I possess of increasing his pay, which is small, will enable me to reward his services.

The rate of going of the time-keeper No. 18, has

* We have no word that answers to this, which seems to imply a right to be kept constantly in pay. T,

been astonishingly regular; which makes me suppose, that the longitude of all the places we have visited since our departure from Conception, are determined with the most rigorous precision.

The rate of the time-keeper No. 27, though less regular than that of No. 18, is as satisfactory as I could hope, and what M. Berthoud foretold it would be. We constantly prefer the circles invented by M. Borda to sextants in determining the longitude by distances between the sun and moon. There has always been the greatest conformity between the results which Messieurs de Vaujuas, de Lauriston, and myself, have obtained by means of those instruments, which, bating some small defects in the execution, are, I think, by far the most perfect that exist for determining the longitude at sea. Father Receveur, and four of my pilots, are also very well versed in these kinds of observations.

In the number of the latter is a man of the name of Brossard. Being very desirous that he should be farther instructed, I do not wish him to be removed from the class of pilots before our return to the Isle of France. He is at present second pilot, and unites a good moral character with an excellent understanding. He is highly deserving of encouragement, and deserves to be taken from the state of indigence in which he was born, and which accords so ill with his conduct and behaviour.

Don Bertrand Joseph Martinez, commander of
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the Spanish frigate *Princesa*, fitted out at San Blas, was at anchor in the Bay of Monterey when we arrived there. He has anticipated our wants with indefatigable kindness, and has rendered us every service in his power. He has requested of me, to beg you will recommend him to the Spanish minister; and most happy should I be, to have an opportunity of contributing to his promotion.

I am about to sail from this place without a sick man on board. The care of M. Lavaux, my surgeon, was exerted in vain to save M. de Vaujuas's servant, who was ill at the time of our leaving Brest of a consumption, which carried him off on the 11th of August, 1786. The buckwheat, as well as the common kind, which we took on board at Brest, have kept very well. Mills constructed by ourselves, and worked by two men when there is little wind, furnish us with twenty pounds of meal each per hour. We have adapted to them the mill-stones made use of by M. de Suffren during his last campaign. I have presented one of these mills to the missionaries of Monterey.

M. DE LAMANON.

In the Chinese seas, Jan. 1, 1787,

SIR,

After a voyage of ten thousand leagues, I should be happy to have it in my power to give you an account of all our discoveries in natural history, and of my particular labours; but all the matters that I treat of, are so connected with one another, that it would be necessary to send you whole volumes. I have neglected nothing in my department, that could tend to fulfil your designs. I have examined every thing from the sand that adheres to the lead of the sounding line, to the mountains to which I have been able to penetrate. I have formed collections of fishes, of shells, of insects, and of descriptions of animals, and I trust I shall be able to add considerably to the number of known organized beings. The natural history of the earth, sea, and air, employ me by turns. If we be not the first circum-navigators, who have the progress of the sciences in view, the English, at least, will not be the only ones. All that remained for you to do, sir, after an advantageous peace, was to give birth to this rivalry of glory which is useful to all the world.

At

At the beginning of the last century *, our neighbours, while in search of gold, discovered a new world. In the present age the French by mathematical measurement have determined the figure and dimensions of the earth. The English have destroyed the chimera of a northern passage, which was entertained by themselves; they have begun a general survey of the globe, at which we are now at work under your auspices, and which on some future day succeeding generations will complete. But what will for ever signalize this voyage, what will be the glory of the French nation in the eyes of philosophers, of our contemporaries, and of posterity, will be our having frequented nations reputed barbarous without having shed a drop of blood. Our voyage, indeed, is not at an end; but the sentiments of our commander are well known to me, and I well know how he is seconded. In a moment of disturbance and danger, occasioned by a mistake, 'Take your muskets,' said he, 'but do not load them.' Every thing was appeased by his prudence. To the merit of being a skilful navigator, and a brave warrior, M. de la Pérouse adds another still dearer to his heart—that of being, at the extremities of the world, the worthy representative of the humanity

* This is an egregious chronological error. Every one knows, that the new world was discovered at the end of the 15th and the beginning of the 16th century. T.

and virtues of his nation. Our voyage will prove to the whole world, that the French are a good people, and that man in a state of nature is not a mischievous animal.

I have detached several memoirs from my journals, and have addressed them to the Academy of Sciences. I beg of you, sir, to have them delivered to my correspondent, M. Condorcet, perpetual secretary of the Academy. I take the liberty at the same time to put several letters under your cover, persuaded, that by that mean they will reach their destination with greater certainty.

M. DE LA PÉROUSE.

Macao, January 3, 1787.

SIR,

All the plans that accompany this were drawn by M. Bernizet, a young man of great understanding and accuracy. Although all the officers cooperated in the astronomical observations, it is no more than just, that they should bear the name of M. Dagelet, by whom they were directed. Besides, it is not sufficient, that they should deserve the confidence of navigators, they should also inspire it; and the name of a professional astronomer, and a member

member of the Academy of Sciences, is well calculated to attain that end.

M. Dagelet and all the officers have also taken surveys; but M. Bernizet has been particularly and constantly engaged in them. He has registered them, brought them together, and rejected such as did not connect. I have therefore considered all the trigonometrical operations as belonging to that geographer, who is far superior to the opinion I entertained of him when he first came on board. He is perfectly master of that branch of the mathematics, that is necessary to his profession. He paints, draws, and takes plans with the greatest facility; and I am satisfied, that his talents would render him highly useful to a general of the land forces, who should make him his aid-de-camp during a war. He would also be very serviceable in the navy; and I should be very happy to procure him a place on my return.

The Astrolabe has, upon all occasions, made the same astronomical and trigonometrical observations as the Bouffole. M. de Langle himself took the distances and horary angles with Messieurs de Vaujuas and de Lauriston; while among his principal officers he had a person, namely, lieutenant de Blondela, who performed exactly the same functions as M. Bernizet. I should have taken care to send you the Astrolabe's plans, if, on a comparison with our own, I had not found them so much alike, that
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the doing so appeared perfectly unnecessary; but the identity of results on board the two ships is a strong proof of the accuracy of our observations.

I have the honour, sir, to forward to you two drawings of M. de Blondela, which are not inferior to the four of M. Duché. The latter has represented the costumes of the natives with the greatest truth; and his drawing of Easter island gives a much better idea of the monuments there, than the engraving after Mr. Hodges. As they appear to have excited much curiosity, I have ordered M. Bernizet to draw an exact plan of them. I have also in my relation endeavoured to complete the description of the natives, who will be little visited by Europeans, on account of the poverty of their island. The three other drawings of M. Duché are also executed with great truth. This is only a specimen of his activity: full twenty more are still remaining in his port-folio.

Young M. Prévost has made all the drawings of birds, fish, and shells. As a reward for his zeal, I have done him the favour of transmitting to you three of his drawings of birds.

The Spanish chart of the Great Pacific Ocean, which I have the honour of forwarding to you, and on which I have marked my track from Monterey to China, is detestable. I add it to the others only as a proof, that our knowledge of that immense sea had made no progress for two centuries, because the
galleons

galleons from Manilla always followed the same route, without ever deviating so much as ten leagues.

M. DE LA PÉROUSE.

Macao, January 3, 1787.

SIR,

I have the honour to address to you a complete account of my voyage as far as Macao, with a table of the route we have followed day by day. I annex thereto plans of the coasts we have run down, of Port des Français, of which we have taken possession, of the different islands we have visited, including *isle Necker*, and of the *Basse des Frégates Françaises*, where we were so near being lost. I have marked the track of the two frigates upon the general chart that accompanies this. It passes through the middle of several islands which do not exist, and which idly occupy spaces upon the maps where land was never seen.

Our chart of the north-west coast of America is certainly the most accurate that has ever been constructed, and wants nothing to complete but those minute details which are the work of time, and of a long series of voyages.

We have surveyed the entrance of the archipelago

lago of St. Lazarus (if it be proper still to give it that name), determined its true latitude and longitude, as well as its width from east to west, and twenty leagues of its depth to the northward. The season, which was already far advanced, the shortness of the days, and the farther plan of our voyage, did not permit me to penetrate to the bottom of that labyrinth, which would have required two or three months, on account of the precautions necessary to be taken in this kind of survey, the result of which, though it might satisfy curiosity, could never be interesting to navigation, or of the smallest utility to France. I should not perhaps have hesitated in undertaking its completion, if I had been at the entrance of this archipelago in the month of June; but at the end of August, with the equinox approaching, the nights twelve hours long, and almost perpetual fogs, the enterprize was, I will be bold to say, impossible; and, without being of any advantage to geography, would have endangered the success of the rest of the voyage.

I flatter myself, sir, you will remark, that out of near eighteen months, we have passed fifteen at sea, and only three in port. The success of my cares has been so constant, that we have had neither sickness nor scurvy; but although at the moment I have the honour of writing to you, we have gone ten thousand leagues, we have as yet performed
little

little more than a third of our voyage; and I dare not flatter myself, that the rest of it will be attended with the same good fortune, if indeed we can call ourselves fortunate after the dreadful accident we met with in *Port des Français*, of which I have had the honour of giving you an account in my letters from Monterey. Since the precautions I had taken did not prevent it, I am but too well persuaded, that we cannot escape from the hand of fate.

I have been scrupulously attentive not to change the names given by captain Cook to the different capes of which he got sight; but you will not fail to remark, sir, that we approached the coast of America much nearer than that celebrated navigator. We have, therefore, been authorized to give names to harbours, bays, islands, and islets, of which he did not even suspect the existence. Custom has permitted me to take their names from among those, which have the most powerful claims to my remembrance.

I heartily wish, sir, that your occupations may allow you to run over the different chapters of my narrative, in order that you may form a judgment of the punctuality with which I have endeavoured to fulfil all the articles of my instructions. I have visited Easter island; the site of the supposed islands east of the Sandwich group, which
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do not exist; Mowee, one of the Sandwich islands, on which Cook did not go ashore; the north-west coast of America, from mount St. Elias as far as Nootka; but from Nootka to Monterey, I have only surveyed those points, the bearings of which captain Cook had no opportunity of taking, and which had remained dotted upon the chart.

I have procured the information required of me by my private instructions concerning the Spanish settlements, and have the honour to send you herewith a memoir upon that subject.

I have crossed the Great Pacific Ocean in a parallel a hundred and sixty leagues distant from that of any other navigator. I have discovered Necker island, and *la Basse des Frégates Françaises*. I have proved by my route the non-existence of the island of Gorta, Deserta, la Mira, and the Gardens*; and I have visited, as I was enjoined to do, one of the islands to the northward of the Mariannes, whence I have proceeded to China.

I shall leave it at the beginning of the season, in order to navigate between the coast of that vast empire, of Corea, of Tartary, and of the Japanese and Kurile islands. I shall afterwards put in at Kamtschatka; and on leaving that port, shall visit the Aleutian islands, as well as those that are laid

* See Vol. II, page 262. (*Fr. Ed.*)

down to the east of Japan, of which the existence is, however, highly doubtful.

Nothing will then remain to be done, but to sail towards the southern hemisphere, not forgetting, at the same time, to visit the Caroline islands, which are situate to the north of the line, and which I am enjoined to explore. It is only from Kamtschatka, sir, that it will be possible for me to inform you of the further plan of the second part of my voyage, because I cannot altogether fix it till I know to a certainty the precise time of my leaving the Siberian harbours; and I am as yet ignorant of that which I shall be obliged to employ in my navigation along the coast of Tartary. The south-west monsoon, which is met with to the southward of the line, as early as the beginning of November, will not allow me yet to form projects, which would be annihilated by the least delay; but if I find it possible to get through Endeavour straits before that monsoon sets in, my first navigation will be round New Holland. In the contrary case, I shall begin with Cook's passage in New Zealand, the south side of New Caledonia, and the Arfacides and Caroline islands: then passing through the Moluccas with the north-west monsoon, I shall explore the coast of New Holland, and afterwards proceed to the isle of France.

This plan is vast; but it does not go beyond
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the zeal of any of the persons employed in the expedition. What is most difficult is, to complete all this business in four years; and perhaps it is impossible for our ships, our rigging, and our provision, to hold out longer. However this may be, sir, I shall use my best endeavours to fulfil the whole of the instructions given me; but I shall be able to make very little stay in the different ports we may touch at; and the passing so much time at sea will not accord very well with the views of our botanists and mineralogists, whose talents for the several sciences they cultivate can only be exercised on shore.

EXTRACT

Of a Letter from M. de la Martinière.

Macao, January 9, 1787.

“ Here we are midway on our voyage, after having successively put in at Madeira, at the island of Teneriffe, at St. Catherine’s in the Brasils, at Conception in Chili, at Easter island, at the Sandwich islands, on the north-west coast of America, and at Monterey in California.”

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(Here M. de la Martinière describes the plants he has met with in the places which the voyagers have visited. Among those he observed in the island of Madeira, he mentions the *dracæna draco*.) “It is becoming, says he, very scarce there. The idea given by the shabby specimens cultivated in our hot-houses is far inferior to that we entertain of it, when we have an opportunity of seeing it in its native soil. I met with three in particular, of which the trunk was six or seven feet high, and four and a half, or five in diameter. The principal branches, twelve or fifteen in number, and as thick as a man’s body, shoot out a little obliquely, dividing themselves generally into two, and now and then into three, to the height of forty or fifty feet, including the seven feet of the trunk. The leaves are all at the extremity of the branches, where they are placed in alternate order, and form a cluster. This tree presents the most perfect regularity to the eye; and tempts the spectator to think, that the most skilful gardener makes it the object of his daily care.”

From the island of Madeira the voyagers proceeded to that of Teneriffe. M. de la Martinière observed, from the harbour of Orotava to the last cone of the peak, five different kinds of vegetable productions. “I am inclined to think, says he, that this difference is only due to the greater or smaller decomposition of the basalt, which must necessarily return to vegetable earth. We are consequently

frequently not surprised to see the plain of Orotava entirely covered with vines, and several sorts of fruit trees, because the rain and melted snow carry down to it the earth that is the finest, and most proper for vegetation.

“ Besides several plants peculiar to this island, of which the celebrated Masson has given an exact description, we meet with the shrub known by the name of *spartium supranulium*, and very well described in the supplement of Linnæus. It is the last shrub found in approaching the summit of the mountain, and vegetates with such luxuriance, that it is nothing uncommon to meet with one of which the assemblage of branches is eighty feet in circumference by seven or eight in height. It bears an immense quantity of flowers, which seem likely to attract the bees, although at an elevation very considerable for so weak an animal to reach. What led me to this conjecture was my finding in the crater of that famous peak several vents or chimnies, at the opening of which were handfuls of bees half consumed. Probably they had been suffocated there by the sulphureous vapours, after having been attracted by the gentle heat into this asylum against the cold and impetuosity of the winds that had surprised them at so great a distance from their humble abode.

We breathed there very much at our ease, as long, at least, as we were not exposed to those sul-

phureous vapours which exhale from the crater by an infinite number of vents, below which we could perceive a great quantity of sulphur shot into needles and crystals of a very beautiful form. The volatile alkali appeared to us to possess all its usual energy. In descending the peak we took the road that leads to the little village of Gouima, which gave me an opportunity of seeing several other little volcanoes, and a few shrubs that I had not found in the other parts of the island, such as the *cytissus proliferus*, the *cistus monspeliensis*, the *cistus villosus*, the *erica arborea*, and the *pinus tæda*, in tolerable plenty."

On the 30th of August the voyagers set off from this island, the first place they put into afterwards being the island of St. Catherine, on the coast of Brasil; a place which offers the finest field possible for all sorts of researches in natural history; but the rain, that fell during M. de la Martinière's stay, hindered his prosecuting his studies with the ardour he could have wished.

More fortunate at Chili, a country where M. Dombay made a long and profitable stay, M. de la Martinière, who was ignorant of the labours of that learned man, undertook, like him, to correct the errors that father Feuillée has committed in his *Histoire des Plantes*. However, while exposing these errors, M. de la Martinière confesses, that the monk's book is a work of merit, and be-
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speaks a very well informed mind. In treating of the *lieti*, a tree under which father Feuillée and other botanists say, that people fall involuntarily asleep, and afterwards experience an insupportable itching, M. de la Martinière expresses himself thus.

“The story he has told us concerning the bad qualities of the *lieti* admits, I think, of some restrictions, according, at least, to what I was witness of myself. Being one day on an excursion, accompanied by one of our soldiers, we were joined by two Spanish peasants, who took a pleasure in following us, and in telling us the country names of the different plants we met with. Coming at length to several *lieti*, which overhung the road we were passing along, I said to them, pointing to one of those trees, Here is a *lieti*, which they immediately confirmed, by calling it by the same name. I then told them by signs that it was dangerous to touch it. One of them, to convince me of the fallacy of my fears, pulled off a handful of the leaves, and chewed them for a long while in his mouth, till he had reduced them to very small fragments. He made me, however, understand by signs, that if I slept in its shade, I should be taken with an itching all over my body, and that I should be obliged to scratch myself; a sign which he had no difficulty in expressing, their want of cleanliness making it a part of their

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daily

daily labour. Thus encouraged by the example he had set us, we gathered handfuls of fruit from the ends of the branches, without either of us experiencing the smallest ill effect. Is it not possible that the bad qualities of this tree are due to an insect which I perceived, of a reddish colour, and exceedingly minute size? This, however, I only give as a conjecture.

M. DE LA PÉROUSE.

SIR,

Macao, Jan. 18, 1787.

It is incumbent on me to give you a particular account of all the officers and passengers of the division; and as I have a great deal to say in their favour, it is a duty which it is very agreeable to me to perform.

M. de Langle is an excellent officer, who combines, with great talents for his profession, the most unshaken fortitude of mind. His punctuality in following me has been so constant, that we have never, perhaps, been once out of hail, unless when I have ordered him to keep at a greater distance, and to make sail a-head, his ship sailing infinitely better than mine.

The

The resignation of M. Monge has not been any way prejudicial to the astronomical observations made on board the *Astrolabe*, because M. de Langle was as good a marine astronomer as the professor himself. He has found an able second in M. Vaujuas, a very well informed officer, who has taught the method of taking observations to M. de Lauriston. The latter is in all respects a very accomplished young man, as well as to information, as to disposition, zeal, and fondness for the service.

I have authorized M. de Langle to make you acquainted with his own opinion of the talents, disposition, and conduct, of each of his officers and passengers. I know he is incapable of being actuated by favour or affection; and consequently that the truth will come to you undisguised.

M. de Clonard, my second captain, is an officer of great merit, who joins to professional talents a degree of punctuality, zeal, honour, and love of glory, which renders him in my eyes one of the most estimable men I ever knew. Agreeably to your orders, I delivered to him his commission as post-captain on the first of January, to take rank among the other captains from that date, as expressed in the letter you did me the honour to write to me, dated Versailles, June 23, 1785.

M. Boutin is a man of great sense and talents.

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His indefatigable activity, and his firmness, and *sangfroid* in difficult circumstances, are such as I can never sufficiently praise. It is to the latter quality that I am indebted for the preservation of the jolly-boat, which rowed through the breakers upon the shoal at *Port des Français*, on the day that our unfortunate companions were cast away.

I should have availed myself on that day of the right you were pleased to grant me in the above letter, of advancing or postponing the epoch of the king's favours. A recompense was certainly due to the officer to whom I owed the preservation of six other persons, and who had himself escaped from imminent danger; but we were all so much afflicted, that I judged it best not to grant him his reward till the first of January 1787, because you had fixed that day for granting one of the same kind to M. de Vaujuas. I have consequently only given him six months earlier rank than he would otherwise have had.

If it were less painful to me, sir, to remind you of the misfortunes we have met with, I should take the liberty of representing to you, that the death of six officers renders null the greatest part of the favours you have been pleased to grant to the officers of the expedition.

Messieurs. Colinet, St. Ceran, Darbaud, Mouton, and Broudou, to the last two of whom I have delivered

livered the two commissions of *Lieutenant de Frégate*, are full of zeal and activity, and do their duty to my perfect satisfaction: a call for their services frequently occurs, each boat being invariably commanded by a commissioned officer. The number would indeed have been insufficient, but for the two appointments I have made.

M. DE LANGLE.

SIR,

Macao, January 18, 1787.

The *Astrolabe* has made a very fortunate passage from Monterey to Macao. I have not lost a single man; I have not had a single person sick on board; and my ship will be able to continue the voyage, as soon as her rigging and sails are repaired.

The ardour and alacrity of my ship's company have never suffered the smallest diminution; and we shall all continue to contribute, with the most heart-felt satisfaction, to the success of M. de la Pérouse's expedition.

The firmness, the good sense, and prudence of M. de Monti, contribute to the happiness of every body, while his talents inspire me with the greatest confidence.

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Since I first entered into the service, I have never met with so accomplished a sea-officer as M. de Vaujuas.

M. Daigremont is a man of great judgment and firmness of mind. He turns his attention to astronomical observations, and will certainly become an adept in them.

M. de Blondela is an excellent sea-officer, and a man of exemplary prudence and steadiness. He employs his leisure in drawing plans of ports, and in making designs equally pleasing and natural.

The ardour of M. de Lauriston, in acquiring the knowledge requisite in his profession, has never suffered a moment's abatement. He is become an excellent officer, and is capable of making the greatest progress in astronomy: I now trust to him for every thing that belongs to that department.

It is to the talents of these five officers, and to the harmony that prevails among them, that I am indebted for the rigorous punctuality with which the *Astrolabe* has kept in sight of the *Bouffole* during the darkest nights and thickest fogs. They take so much interest in the safety and preservation of the ship, as well as in the success of the voyage, that I have at present less occupation than any one of them.

I shall be completely happy if they receive at the
Isle

Isle of France the favours which you have allowed them to claim on their return.

I think, that M. de Vaujuas, who was at the head of the list of ensigns when you made him a lieutenant, and who is destitute of fortune, is deserving of the pension of eight hundred livres granted to the late M. d'Escures.

I think also, that M. de Lauriston deserves to take rank among the ensigns from the 13th of July, 1786, the day on which M. de la Pérouse gave him his commission.

It is impossible for me, sir, sufficiently to praise the amenity of manners, and all the good qualities of M. de Lesseps.

Father Receveur performs his sacred functions with great propriety. He is a man of pleasing manners, and good understanding. At sea he takes meteorological and astronomical observations; and in harbour attends to every thing relative to natural history.

M. de la Martinière applies himself to botany with a great deal of diligence.

M. Dufresne has made himself useful by conducting our trade for otter skins; and has been very careful in their preservation and sale. As he is desirous of returning to France; and as I consider him as a man who can be of no farther service to us, M. de la Pérouse has given him leave to go home.

I have

I have a great deal to say in praise of M. Lavaux, my surgeon, and of M. Guillon, his mate, who have contributed much by their care and foresight to the good health of my crew. As yet they have had a great deal of leisure, which they employ when in harbour in botanical pursuits, and in making collections for the king's cabinet of natural history.

I have also to solicit your bounty in favour of M. Brossard, who, after three years and a half's service as volunteer in different ships, embarked as assistant pilot on board the *Astrolabe*. He has done the duty of second pilot with great zeal and intelligence, since July the 13th, 1786. I entreat you to send a commission of *lieutenant de frégate* to meet him at the Isle of France.

Permit me also to recommend to you my pilot, gunner, carpenter, sail-maker, and caulker. They are all old servants, who have given proofs of their ability and steadiness, and who contribute in the highest degree to the good humour that prevails on board my ship, and to the good intelligence that is kept up between the different individuals of my crew. I say nothing of my boatswain, because I intend to give him his commission of *entretenu*, if he continue to conduct himself with the same propriety as heretofore.

M. de Bellegarde has been turned over from the Marquis de Castries flute to the *Astrolabe*. He is
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a young man, of whom M. de Richery speaks in the highest terms. His rank is that of *garde de la marine*.

M. DE LA PÉROUSE.

SIR,

Macao, February 2, 1787.

I have often spoken to you of our furs; and have even informed you they were sold. I had every reason to think so, as the bargain was concluded; but difficulties started by the purchasers at the moment of delivery have broken it off. At one time I had resolved to carry them to France, where I am convinced they would sell with more certainty and to greater advantage than in China; but considering that my return to Europe is still very remote, I have availed myself of the obliging offer made me by M. Elstockenstrom, director of the Swedish company. He has been good enough to undertake to receive them into his charge, to sell them for the benefit of the seamen, and to remit the money to the Isle of France, where I intend to share it among the crews, unless the orders you may send me to that colony, where I shall not arrive till two years hence, should dispose of it otherwise.

It is impossible for me to omit informing you, that the French nation has not at this moment a single individual in China, capable of inspiring me
with

with sufficient confidence for so trifling a deposit. The two supercargoes of the company are out of their senses. M. Thérien, the first, has shot himself; and M. Dumoulin, the second, has committed such acts of insanity as in Europe would have insured him a place in a mad-house. He nevertheless remains charged with concerns of considerable importance, because nobody thinks himself properly authorized to dismiss him. The consequence is, that all the commercial nations, even Denmark and Sweden, have men of the greatest merit at Macao; while the French have the privilege of not having there a single individual sufficiently well-informed for a village-bailiff: I shall take the liberty of going more at large into this subject when I have the honour of writing to you from Manilla.

I forgot to tell you in my former letter, that I found in the road of Macao the Marquis de Castries *flûte*, commanded by M. de Richery, *enseigne de vaisseau*. As this ship was dispatched by Messieurs de Cossigny and d'Entrecasteaux, you will be informed by them of the nature of his mission; but I have taken upon me to turn over M. de Bellegarde to the *Astrolabe*, in the room of the three officers of that ship who were lost on the coast of America, although he is only a *garde de la marine*.

M. DE

M. DE LA PÉROUSE.

SIR,

Manilla, April 7, 1787.

If your occupations have permitted you to cast an eye over my narrative, I flatter myself you will have perceived, that we have neglected nothing to render our voyage useful and interesting. Our chart of the north-west coast of America from Mount St. Elias to Monterey will leave little to be done by future navigators. Our misfortune at *Port des Français*, far from diminishing our zeal, has only convinced us more strongly of our duties towards our king and country, and we have constantly regretted, that no hope remains of meeting with a new continent, but only a few islands of little importance, which will add neither to our knowledge, nor to our commerce. You will have seen by the packets intrusted to M. Dufresne, that, after having sold our furs, I purposed sailing for Manilla, in order to take provision on board, overhaul our rigging, repair our rudder, and put the ships into a condition to prosecute the voyage, by passing through the channel of Formosa, and running along the west coast of Japan, and that of Tartary.

You will please to observe, sir, that this part of my voyage has been generally considered as the

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most difficult; and if we be fortunate enough to explore those coasts with the same care as that of America, we may boast of having been the first to perform a very difficult navigation in narrow seas, subject to violent tempests, entirely unknown, enveloped in fogs, and probably full of rocks and currents. All these difficulties only offer themselves to our imagination, in order to call forth our prudence, and inflame our zeal.

I left Macao the 6th of February, and did not arrive at Cavite, in the bay of Manilla, till the 28th. The particulars of this run are not altogether uninteresting to navigation, and will serve to add a chapter to our narrative.

I preferred the harbour of Cavite to the road of Manilla, because we are near an arsenal, and have all sorts of succour and assistance within our reach. They have been most lavishly bestowed upon us; and we are indebted to the orders of government, and still more to the kindness of Mr. Gonzalez Carvagnal, intendant of the Philippines, for being likely to leave Cavite as well provided with fresh provision as when we sailed from Brest. I shall have the honour of sending you from Kamtschatka, agreeably to your orders, a circumstantial memoir concerning Manilla, its resources, its administration, the new company formed there, and the character of the administrators, who are far from having adopted the sentiments of the cabinet of Madrid in favour

of the French. I must, however, except the intendant, from whom we have every moment received marks of the greatest kindness, and who has not failed to go himself several times a day to all our contractors, lest the well-known tardiness of his countrymen should occasion any delay.

I shall sail the 8th of April, although the north-east monsoon will still prevail; but I shall be in the way of availing myself of the first change of wind to get to the northward. Before my departure, I have had the satisfaction of seeing the *Subtile* frigate, commanded by M. de la Croix de Castries, arrive in the bay of Manilla. She was dispatched by M. d'Entrecasteaux in great measure with a view of making me acquainted with his proceedings on the coast of China, in order that they might not be counteracted by ours, in case our instructions should enjoin us to navigate on the north coast of that empire.

M. d'Entrecasteaux will give you an account of the revolt of the natives of Formosa, and of his offers of assistance to the Chinese in the reduction of the rebels. They were not accepted; and I confess that I should have been grieved to see the French navy seconding the most iniquitous and oppressive government that exists upon the face of the earth. I can now without a crime offer up wishes to heaven for the success of the Formosians.

I have made answer to M. d'Entrecasteaux, that

my navigation on the coast of China will not alarm that government; that I shall not show my colours, and that I shall sedulously avoid every thing that may give umbrage; adding, that, although a true-born Frenchman, I am in my present voyage a cosmopolite, entirely unconcerned in the politics of Asia.

You addressed to me before my departure from Brest, a memoir of M. Veillard, concerning Formosa; but I found with astonishment at Macao, that this same M. Veillard had no knowledge of the country; that he could not answer any one of my questions; and that his memoir was a copy from a manuscript in the possession of all the Europeans at that place. Although it is foreign from the purpose of my voyage to enter into any details concerning the French of the factory at Canton, yet I feel that I should not be worthy of the confidence you are pleased to repose in me, if I failed to inform you, that Messieurs Veillard, Costar, de Guignes, and Dumoulin, ought never to have been charged with the concerns of a great nation. I have been obliged upon every occasion to apply to M. Elstockenstrom, who conducts the affairs of the Swedish company.

I shall have the honour of writing you a particular letter upon this subject.

M. DE

M. DE LA PÉROUSE.

SIR,

Manilla, April 7, 1787.

The arrival of M. de la Croix de Castries at Manilla has been one of the most fortunate events of our voyage. He has been kind enough, as I have already had the honour of informing you, to undertake to carry our furs to France, and has consented in the most obliging manner to repair the losses we have suffered since our departure, by sparing an officer and four of his seamen to each of our ships. In consequence of this arrangement, M. Guyet de la Villeneuve, *enseigne de vaisseau*, has been turned over to the *Bouffole*, and M. le Gobien, *garde de la marine*, to the *Astrolabe*. This recruit was become the more necessary, because a few days ago we had the misfortune to lose lieutenant Daigremont of the *Astrolabe*, who was carried off by a dysentery; and because the bad state of M. de Saint-Ceran's health has obliged me to send him to the Isle of France for his recovery, all the surgeons having declared, that it was impossible for him to continue the voyage. This makes a diminution of eight officers since our departure from France, seven of whom no longer exist, and the eighth is in a very bad way. The only persons, however, who

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for two years past have died a natural death, were a single officer and a servant. Both belonged to the *Astrolabe*, the crew of which has nevertheless enjoyed in general still better health than that of the *Bouffole*.

M. DE LA PÉROUSE.

SIR,

Avatscha, Sept. 10, 1787.

I flatter myself you will peruse with pleasure the particulars of our voyage from *Mannila* to *Kamtschatka*. Our ships have taken a route entirely unknown. They have passed between *Corea* and *Japan*; run along the coast of *Tartary* to the neighbourhood of the river *Segalien*; reconnoitred the *Oku-Jesso*, and the *Jesso* of the *Japanese*; and discovered new straits for sailing out of the sea of *Tartary*. Our discoveries are connected with, and have established the truth of, those of the *Dutch*, which the greater number of geographers were beginning to reject, and which the *Russians* had thought it most expedient to expunge from their charts. At length, after clearing the land to the north of the *Company's Land*, we steered a course for *Kamtschatka*, and anchored in the bay of *Avatscha*, after a run of a hundred and fifty days, of which we passed a hundred and forty
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under fail. We have not, however, a single person sick on board of either frigate, although we have been constantly navigating in the midst of the thickest fogs. Obligated every moment to anchor and to get under way again, with a degree of fatigue of which captain Cook's voyages afford few examples, our cares for preserving the health of our crews have as yet been attended with still greater success than those of that celebrated navigator, not a single man having died in twenty-six months since our departure from Europe, on board the *Bouffole*, and both ships being at this moment entirely free from sick.

I remember, sir, that when my instructions were delivered to me, you remarked, that this part of our voyage was not more difficult than interesting, since it could not be of less importance to geographers to know the limits of the continent we inhabit, than those of the southern continent, or the north-west coast of America. We have been fortunate enough to restore to geographers two islands as considerable in extent as the British isles, and at length to decide the only geographical problem that remained perhaps to be solved concerning the globe. It is now only that I dare to place our voyage next to those of captain Cook. If death had not put a stop to the career of that great man, it is probable, that he would not have left the survey of the eastern coast of Tary to his successors. If your occupations should

permit you, sir, to cast an eye over the different chapters of my narrative, you will there find, along with nautical details, all the observations that I have had an opportunity of making upon the nations we have visited, and upon the soil and productions of their country. I have endeavoured to pass over nothing relative to commerce that could be interesting to the government, not forgetting, at the same time, that it was necessary to occupy the leisure of the learned, who are perhaps waiting for our return in order to publish new systems. I have added to my narrative all the charts, plans, and tables of latitude and longitude, that are necessary, as well as the drawings of Messieurs Duché and Blondela, for the truth of which I can vouch.

I have also the honour to transmit to you two memoirs concerning Manilla and Formosa. Both relate to the political part of my instructions, and are very concise, because I know the value of your time, and because they only contain what I did not think proper to insert in my narrative. I could not venture to trust them to the post; and make no doubt but you will approve of my dispatching M. Lesséps, our Russian interpreter, to France. I have considered, that his pay and allowance till our return to France would cost nearly as much as his journey from Kamtschatka to Paris; and I should regret taking into the southern hemisphere a young man, who is destined on some future day to fill the
office

office of consul, and who would lose on board of ship a great deal of time that he may employ much better in gaining information. I have given him charge of my packets, and flatter myself, that by the time he reaches you the ships will be at New Zealand.

In a few days I shall have the honour of addressing to you a letter relating solely to the further plan of my voyage. It will in all take up nearly four years, during which we shall have been at least thirty-eight months under sail; a thing perhaps unexampled in the whole history of navigation.

M DE LA PÉROUSE.

SIR,

Avatscha, September 21, 1787.

I have had the honour to transmit to you, by the hands of Messieurs Dufresne and Lesseps, a narrative of our voyage from our departure from Brest till our arrival at Kamtschatka. It remains for me to inform you of my project for our future proceedings, since I have availed myself of the permission you gave me to make such changes in the plan of my voyage as might appear advisable, conforming at the same time, as much as possible, to my instructions. I have in consequence thought
proper,

proper, to begin with the northern hemisphere, and to finish with the southern, in which is situate the Isle of France; the place that I look upon as the period of my labours.

I flatter myself, that I have entirely and completely fulfilled all you expected from me till this moment, and I have been so perfectly well seconded by M. de Langle, that if the voyage have any merit in your eyes, he ought to partake of the reward. The two ships, notwithstanding the fogs, have sailed with so much concert, and so close together, that it might almost be said that there was only a single vessel, and a single captain employed on the expedition. I intend to leave the bay of Avatscha on the 1st of October. I shall direct my course so as to reconnoitre the northerly Kurile Islands as far as to the Canal de la Bouffole, whence I shall run into the 37th parallel of latitude, in order to seek the land supposed to have been discovered by the Spaniards in 1610. I do not believe in the existence of this land, which is very near the usual track of the galleons, and of which I am inclined to think, from all the information I have been able to collect, that the Spaniards have no knowledge. From the 37th parallel I shall direct my course towards the Archipelago that lies north of the Mariannes, and shall follow that chain of islands as far as Guam, where I shall put in for five days only, in order to take in as much fruit, and as many oxen, as may preserve
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our crews from the scurvy during the sequel of our very long voyage.

From Guam I shall steer for the Caroline Islands, provided the information I may procure afford any certainty of my making Cape Choiseul of the *Terre des Arfacides*, and of my being able to sail through the same channel as M. de Bougainville, in order to get to the southward, and afterwards to bear away with the westerly winds for Queen Charlotte's Sound in New Zealand*, about the 20th of January 1788. If, on the contrary, my own observations and researches should prove the inexpediency of my taking that route, I shall give up the idea of exploring the Carolines, which would oblige me to run a hundred and fifty leagues to leeward of the Mariannes, and I shall steer directly from Guam to New Zealand, keeping as much as possible to the eastward; and in this track, which will be absolutely new, it is probable that I shall find a variety of islands still more interesting than the Carolines, and certainly less known. I shall employ more or less time in visiting them, it not being necessary, in either case, that I should arrive at New Zealand before the 20th of January 1788. From

* In another letter, dated September 28, la Pérouse acknowledges his receiving letters from the minister on the 26th at Kamtschatka; and says that he shall only alter the plan of his voyage by not going to New Zealand, in order that he may have more time to survey the coasts of New Holland, and the settlement of the English there. (*Fr. Ed.*)

Queen Charlotte's Sound I shall make a run to the Friendly Islands, and shall do every thing that I am enjoined by my instructions, in regard to the southern part of New Caledonia; to the island of Santa Cruz of Mendana, on the south coast of the *Terre des Arfacides*; and to Bougainville's Louisiade, by determining whether it be part of New Guinea, or separated from it. At the end of July I shall pass between New Guinea and New Holland, by a different channel from that of the Endeavour, provided, however, that such a one exist. During the months of August, September, and part of October, I shall visit the gulph of Carpentaria, and the coast of New Holland, but in such a way that it may be possible for me to get to the northward, and to arrive at the beginning of December, 1788, at the Isle of France. I shall sail thence very speedily, in order to reconnoitre Bouvet's pretended Cape Circumcision, and shall arrive in France (after having put in or not at the Cape of Good Hope, according to circumstances) in June 1789, forty-six months after my departure.

I flatter myself you will see with pleasure, that in the course of so long a voyage I shall have no occasion to put in at those everlasting Society Islands, about which more has been written than concerning several kingdoms of Europe; and I confess to you, that I congratulate myself on having nothing to say either about Otaheite or Queen Oberea. I have,
indeed,

indeed, taken particular care to keep out of the track of preceding navigators.

M. DE LA PÉROUSE.

SIR,

Avatscha, September 25, 1787.

You know that our misfortunes on the north-west coast of America have rendered null almost all the favours you were pleased to grant to the commissioned officers of the two frigates. Messieurs d'Escures, and Pierrevert, had each a pension, which might be given to Messieurs de Vaujuas, and Boutin, officers of equal merit, and equally remarkable for talents, activity, and zeal. Messieurs de Bellegarde and le Gobien, *Gardes de la Marine*, whom you have made the associates of our labours, and who testified both at Manilla and Macao so strong a desire to fill the places of the officers whom we have had the misfortune to lose, will have well deserved, on their arrival at the Isle of France, the commissions of ensign that had been granted to Messieurs de Boutervilliers, de Flasse, and de Montarnal. Lieutenants de Blondela and Colinet, to whom you have permitted me to give hopes of the rank of captain of a fire-ship on their return, have already by their good conduct merited that favour, which I entreat you to transmit to the Isle
of

of France, with M. de Monti's commission, and a letter of approbation to M. de Clonard. The last-mentioned officer having been promoted to the rank of post captain, has nothing farther to desire; but he has continued to do the duty of lieutenant, and to attend to the most minute particulars of service with a degree of zeal and diligence deserving the highest praise; and did I not fear to incur suspicion because he is my particular friend, I would be bold to say, that it is impossible to meet with a better officer, or a man of more honour and virtue.

I have also much to say in praise of M. Guyet de la Villeneuve, who was turned over at Manilla from the frigate of M. de la Croix de Castries to mine, in the room of M. de Saint-Ceran, whose extreme bad health forced me to send him to the Isle of France, and also of Messieurs Mouton and Broudou, to whom I have given the lieutenants commissions that you were pleased to deliver to me in blank before my departure.

M. de Langle has given up his astronomical labours to M. de Lauriston, a young man of great talents, zeal, and merit. He has made a pupil of him, who stands no longer in need of a master. M. Darbaud has also served as an able second to M. Dagelet, and I am persuaded, that there is not perhaps in France any young man of his age, who is equally well informed.

M. Dagelet does here the same business as ourselves,

selves, and, no doubt, does it better than we do; among a thousand good and amiable qualities, I know of no fault in him but that of a weak constitution.

As to M. de Langle, he is above all praise; and I wish from my heart that he may arrive at high rank, before years and fatigue have diminished his energy and powers.

M. Rollin, doctor of physic, and my surgeon, is a man of uncommon information. By his attention he has preserved us from the scurvy, and all other diseases. You have authorised me, sir, to promise him a pension on his return, provided the mortality on board my frigate should not exceed three in a hundred; and during twenty-six months that have elapsed since our departure, nobody has died a natural death on board the *Bouffole*; or have we a single sick man in the ship.

M. de Langle is also very well satisfied with M. Lavaux, his surgeon. He has only lost a consumptive servant, and M. Daigremont, who killed himself by attempting to cure a dysentery with burnt brandy. The purser's steward (*commis du munitionnaire*) is also dead in consequence of his skull being fractured by the bursting of a musket.

M. DE

M. DE LANGLE.

SIR,

Avatscha, September 25, 1787.

The fogs in which we have been almost constantly enveloped since our departure from Manilla have very much impaired the rigging of the *Astrolabe*. I hope, however, with the spare cordage I have on board, to be able to carry her into the Isle of France at the time fixed upon in the plan of the voyage. In other respects my ship is in good condition.

I have always sailed during the fogs within hail of the *Bouffole*, because M. de la Pérouse has made a point of keeping me company, and because my officers have piqued themselves on not losing the commodore. I wish it were possible to add to the praise I have already given to their talents, to the patience with which they wait for the end of the voyage, and to their desire of making new discoveries.

The interest I feel in the glory of the nation, and in the success of M. de la Pérouse, induces me to mention to you how much room we have to congratulate ourselves on having so happily finished our
difficult

difficult and perilous navigation on the coast of Asia, thanks to the indefatigable vigilance, prudence, and talents, of our commander. I shall always think it my duty to second his efforts, as well out of zeal for the progress of geography, as out of gratitude for the proofs of friendship which he has given me at all times. I know also that you take an interest in the success of our voyage. Nothing can make me forget the favours with which you have honoured me, and I have nothing more at heart than to merit a continuance of them.

M. DE LA PÉROUSE.

SIR,

Avatscha, September 27, 1787.

M. Lesseps, to whom I have given charge of my packets, is a young man, whose conduct during the whole voyage has been perfectly to my satisfaction; and I make a real sacrifice to my friendship for him by sending him to France: but, as he is probably destined on some future day to fill his father's place in Russia, I thought that a journey across that vast empire might furnish him with information useful to our commerce, and proper to strengthen our connexion with a state, of which the productions are so serviceable to our navy.

VOL. III.

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It appears to me, that M. Lesseps speaks the Russian tongue with as much facility as French. He has rendered us the greatest services in Kamtschatka; and if the reversion of his father's place of consul-general at Petersburg were to be the reward of his voyage round the world, I should consider the favour as a proof of your being satisfied with our conduct.

M. DE LA PÉROUSE.

SIR,

Botany Bay, February 5, 1788.

By the time this letter reaches you I flatter myself that you will have received the journal of my voyage from Manilla to Kamtschatka, which I had the honour of transmitting to you by the hands of M. Lesseps, who set off for Paris, from the harbour of St. Peter and St. Paul, on the 1st of October 1787. That part of our expedition, though by far the most difficult, because performed in seas absolutely new to navigators, was nevertheless the only one in which we met with no misfortune. The most dreadful disaster awaited us in the southern hemisphere. I can only repeat here what you will
I find

find more at length in my journal. Messieurs de Langle and de Lamanon, with ten other persons, have fallen victims to their humanity. Could they have prevailed on themselves to fire upon the natives before they were surrounded by them, our long-boats would not have been broken to pieces, or would the king have lost one of the best officers in the navy.

Although that event very much diminished the crew of the two ships, I did not think proper to alter the further plan of my voyage; but I have been obliged to explore several interesting islands in the South sea more rapidly than I should otherwise have done, in order to have time to construct two long-boats at Botany Bay, and to reconnoitre the different points indicated in my instructions, before the change of the monsoon, which would render such a survey impossible.

We are arrived at New Holland without having a single person sick in either ship. Eighteen of the twenty wounded that we had on board on leaving Maouna are perfectly recovered; and M. Lavaux, surgeon of the *Astrolabe*, and a sailor belonging to that frigate, who were both trepanned, are now in a fair way of doing well.

M. de Monti, who was second captain with M. de Langle, kept the command of the *Astrolabe* till our arrival at Botany Bay. He is so good a seaman,

that I did not think it necessary to make any change among the commissioned officers till we came into port, where it was impossible for me to overlook the claims of M. de Clonard, who has the rank of post-captain. He is succeeded on board my ship by M. de Monti, whose zeal and talents are superior to all praise, and whose good conduct entitles him to the commission of post-captain, which you had the goodness to promise, in case the report made of him should be of a favourable kind.

The English arrived but five days before us at Botany Bay. To the most pointed attentions they have added all the offers of service in their power; and we had to regret their setting off, immediately after our arrival, for Port Jackson, fifteen miles to the northward of Botany Bay. Commodore Phillips had good reason to prefer that port, and has left us alone and masters of this bay, where our long-boats are already upon the stocks. I expect to launch them at the end of the month.

We are only ten miles distant from the English by land, and consequently have it in our power to communicate with them frequently. As it is possible, that commodore Phillips may make excursions to the islands of the South sea, I have been induced to give him the latitude and longitude of Maoua, that he may be upon his guard against the perfidious caresses of the natives, in case his vessels
should

should touch there in the course of their navigation *.

M. DE LESSEPS.

SIR,

Verfailles, October 31, 1783.

On my arrival at Kamtschatka, I endeavoured to procure the particulars of a secret expedition fitting out at Okhotsk; and of the motives of the voyage. Some notions which I acquired in passing through that port may perhaps gratify your curiosity, and serve as a testimony of my desire to do every thing that may give you satisfaction. I take the liberty of adding to it such other information as I presume to be new, and consequently deserving of your attention.

Mr. Billings, who served with Cook in his last voyage in quality of assistant astronomer, was sent from England to command the expedition, the empress having applied for a person versed in that department of the sciences. Her imperial majesty conferred upon him the rank of captain of a ship of

* Here in the original follows a short extract of a letter from M. de la Pérouse, which being included *verbatim* in the letter dated Avatscha, September 21, is of course omitted. T.

the second rate, and gave him *carte blanche*, and a right to examine the situation of all Siberia. She was at great expence in constructing and fitting out two vessels at Okhotsk; officers being selected from the Russian navy, and sent under Mr. Billings's command to that place, in order to assist in their building and equipment. There was even some idea of their sailing at the time of M. de la Pérouse's departure, since he was told, that he might possibly meet with them in the northerly part of the South sea. I found the armament, however, so little advanced when passing through Okhotsk on the 8th of May of the present year, that the frame of one ship was hardly finished, and the other was only just laid down upon the stocks. According to all probability, these ships will scarcely be able to put to sea in the year 1789. In order to lose no time, Mr. Billings determined to equip some small vessels or sloops upon the river Kolumé, and after having sailed down that river in 1787, made a voyage in the frozen ocean. I imagine, that it was his intention to go by sea to Kamtschatka, and to double Capes Svetoi and Tchukotkoi, the first being the only obstacle that several navigators had already met with in their voyages. Mr. Billings was not able to overcome it, the ice probably hindering him from getting round Cape Svetoi. He returned to the river Kolumé at the latter end of the same year. The ice drifted by the northerly winds towards the coast

coast often forced him to approach it; and he took advantage of the southerly gales to continue his voyage, the sea being then more free. Nobody is yet acquainted with the destination of the two ships at Okhotsk, under the command of Mr. Billings. It is possible, according to reports circulated in the country, that he means to pass Behring's straits in order to accomplish his first design, or else to run along the north-west coast of America. His secret is, however, so scrupulously kept, that my conjectures have by no means a solid foundation.

Herewith I take the liberty of sending you two charts, which I found means to procure at Okhotsk. I beg leave to request your acceptance of them; and, as I would not take upon me to copy them, I intreat you will be pleased to give orders that copies may be sent to me.

The first is a general chart containing the eastern part of Asia, some of the Aleutian islands, Kamtschatka, the seas of Okhotsk and Penschinka, the Kurile isles, the extent of the Russian discoveries, and also the little they know of Segalien island, of the land of Jessō, and of the Coast of Tartary. The other chart appears romantic, and is so in reality; but notwithstanding its singularity,* I thought, sir, that it might chance to afford you pleasure. Besides, I am assured, that the Kurile islands are exceedingly well laid down; and I have

translated the articles necessary to render the chart intelligible. Neither the person who constructed it, nor the navigator who made the voyage, is known. The description, which I think very improbable, as well as the chart, was copied after the original left at Okhotsk, where I met with nothing that was more interesting.

Several vessels were wrecked last year upon the coast of Kamtschatka, or in the environs. Among others that met with this misfortune was a vessel belonging to Mr. Lanz, an English merchant, and commanded by captain Peters. She went to pieces upon Copper Island. A Portuguese and a Bengal black were the only two persons who saved their lives; and after having passed the winter in the island, were brought to Kamtschatka by the Russians. They are to be sent this year to Petersburg, and will probably be there in two or three months. The captain, when he first put in at Kamtschatka, entered into engagements with a merchant of the country to the amount of about 80,000 rubles; and by means of the same Russian sent to ask permission of the empress to trade in that part of her dominions. The return of this vessel was expected at Kamtschatka; but captain Peters had been in the mean time to make a voyage to the north-west coast of America, probably with a view of procuring furs; and it was not till his return, and at a
very

very small distance from the harbour of St. Peter and St. Paul, that he lost his ship and life. He consequently could not enjoy the permission for which he had asked, and which was granted without hesitation.

I also met with nine Japanese at Kamtschatka, who, by a gale of wind and the want of a compass, had been driven from the coast of their own island, of which its inhabitants take great care never to lose sight. They kept the sea six months in a little coasting vessel, the first land they made being the Aleutian islands, where they cast anchor with all speed, went on shore, and abandoned their vessel to its fate. Neither the night, nor the appearance of bad weather, nor the efforts of the Russians they found there, could prevail upon them to return on board in order to land their cargo, or to put their vessel in a place of safety. Overjoyed at finding themselves once more on land, they thought no more about it, and left it exposed to the fury of the wind, which during the night drove it upon the coast. A very small part of their effects were saved. Of these the Russians took charge, and conveyed them to Kamtschatka in the vessels which they send in quest of furs. They carried thither also the nine Japanese, who are treated with particular kindness, and are speedily to be sent to Petersburg.

I have

I have the honour to inform you, that the vocabulary of the Kamtschadale language, made by request of M. de la Pérouse, is as perfect as it was possible for me to make it. It is at your service and at his: but have the goodness to permit me to insert it in my journal. It will perhaps render it more interesting. According to your orders, I am at work upon it with the greatest ardour; happy that it will be soon in my power to present you with it, and to render myself more worthy of your protection.

M. de la Pérouse recommended to me in my instructions to remind you of the obligations he lies under to colonel Kasloff-Ougrenin, commandant of Okhotsk and Kamtschatka, who refused to receive any payment for seven oxen which he furnished to our crew. He would also have wished to furnish the rye-meal for which M. de la Pérouse had applied; but unfortunately there was not any in the magazines of Kamtschatka. Mr. Vassili-Schmaleff, already known by the narrative of Cook's voyage, and at present inspector-general of Kamtschatka, has also done us many good offices, as well as ensign Kaborof, commandant of the harbour of St. Peter and St. Paul. M. de la Pérouse says, that he was as well received by them as if they had been his own countrymen, and that he wished much, while testifying his gratitude to the court of Russia, to procure these

these gentlemen a reward proportionate to their services. Besides, you know that the English on their return made many presents to major Behm, then commandant of Kamtschatka, as well as to the other Russian officers of that peninsula; and we have reason to believe, that they were not so well treated as we. I am obliged to the above officers for having assisted me in my journey over-land, and will venture to say, that they afforded me every assistance in their power. Mr. Kasloff, who is much attached to me, gave me a note of what he expected from the bounty of the empress. If you think fit, I shall be happy to deliver it to you.

EXTRACTS

*Of Letters from Messieurs de la Pérouse and Dagelet,
to M. Fleurieu.*

M. DE LA PÉROUSE.

Macao Road, January 3, 1787.

I SEND you a plan of Monterey, drawn by ourselves. I have had an opportunity at that place of becoming acquainted with several officers of the little navy of San-Blas, who certainly are not wanting in information, and who appeared to me to be fully capable of constructing charts with precision.

You will see, that I have several times changed the plan of my voyage, according to the suggestions of reflection and experience. It is only in this manner, that a plan so vast as ours can be executed.

For instance, I directed my course from the Sandwich islands directly for Mount Saint Elias, because, if I had begun with Monterey in order to sail northward afterwards, I should have met with a constant opposition from the north-west wind; whereas the same wind enabled me, when standing to the southward, to range along the coast of America, and to follow it at pleasure. But the fogs are an obstacle incessantly springing up, and occasion the loss of
a great

a great deal of time, which we are obliged to give to prudence. I do not think, that there is any such thing as reckoning upon three clear days in a month. The currents are very violent, and also make it necessary to proceed with great caution. At *Port des Français* they caused the misfortune, with which my letters have made you acquainted, and which will be to me an everlasting subject of regret.

I do not know whether you will be sorry for my not having been more particular in visiting the Archipelago of St. Lazarus, if indeed that name ought to be retained, which is certainly contrary to my opinion. But recollect, that I only discovered the entrance of it at the end of August, that the days were growing very short, and that we met with continual fogs, and with currents off Cape Hector that ran more than six knots (miles) an hour. It was therefore impossible to make our way between all the islands in the space of two or three months; and as early as the beginning of September the season is at an end. To make such a survey complete would require an expedition having no other object in view, and, at least, of two or three years' duration. Nothing is so tedious as to examine in detail a coast which is thick sown with islands, and deeply indented with gulphs, and which you are forbidden to approach, without the greatest caution, by frequent fogs, and by currents equally violent and uncertain. However this may be, I have no doubt

of the voyage of admiral de Fuentes, in the shape, at least, in which it is given to the public, being an exaggeration, if not a *reverie*. So prodigious a space cannot be run over in the short time which he is said to have taken. I am therefore tempted to believe, that both the admiral, and his captain Bernarda, are chimerical beings, and the voyage attributed to them a fiction. It is not the less true, that from Cross Sound, as far as Cape Fleuriu, the great Spanish navigator Maurelle, captain Cook, and myself, have only coasted along islands at forty or fifty-five leagues distance from the continent, of which I got sight again at the cape I have just mentioned. These islands are, for the most part, of great extent; and as they are shut in with one another, their position gives them the appearance of an uninterrupted coast. I had several times suspected, that the land I saw was not all connected; but my suspicion was changed into certainty, when, after having doubled Cape Hector, I had run twenty leagues to the northward. All these details are given upon a supposition, that you have before you the charts and plans I send you, and that you follow my route while reading my narrative.

You must be sensible, that, after all, but few details can be expected from us. In order to run over all the points indicated by my instructions in the space of four years, it is necessary, that we should not lose a single day. But our voyage will afford a proof,
that

that it is possible for the health of a ship's company not to be injured by the longest stay at sea. We are arrived at Macao without having a single man attacked by the scurvy; and yet out of eighteen months that the voyage has already lasted, fifteen have been employed in a very laborious navigation, which has carried us successively into climates of the most opposite kinds.

I write to you in haste, without the least order; and throw my ideas upon paper as fast as they occur. I am anchored at five miles distance from the town, with which I have not yet had any intercourse; and as I am told, that a ship is to sail tomorrow for Europe, I write my dispatches post-haste. I annex my narrative, my charts, and my plans, to the letters I am writing to the minister. I shall transmit to him duplicates by the first opportunity that offers, that navigators may at least profit by the beginning of our voyage, in case any misfortune should befall us upon the coast of Tartary. In looking over my different chapters you will certainly remark with pleasure, that though the savages we have visited have done us some harm, we have been fortunate enough not to do them any mischief. You well know, that I am expressly enjoined not to use violence against them but at the last extremity; and you also know, that the principle of forbearance is engraven upon my heart.

P. S. We have purchased, upon the coast of
North

North America, near a thousand otter skins; but the greater part were in shreds, and almost rotten. I thought it incumbent on me to carry on our commerce with a scrupulosity and delicacy, of which none of the navigators who have landed on that coast have set me an example. Not a single skin was bought by any body but M. Dufresne. I charged him to conduct our trade, and he acquitted himself of his delicate commission with equal zeal and intelligence. He numbered and registered every skin, one after another; and is going to sell them here for the benefit of our crews. I shall transmit an account to the minister, as a supercargo would to his owner; and I shall annex the receipts of those to whom any money may be paid. I would not suffer a single skin to be reserved either for the commissioned officers, the men of science, the artists, or myself. The profit of the voyage will go entirely to the sailors*: and the glory, if there be any, will fall to the lot of the officers who have conducted the expedition, and of their co-operators. I confess, my dear friend, that I would not have made this voyage for a hundred thousand crowns counted down to me; but I undertook it out of a sense of duty, and out of gratitude for the confidence that was placed in my zeal, no doubt, rather than in my talents.

* The skins were sold for 10,000 dollars, for the benefit of the crews.

Manilla

Manilla, April 8, 1787.

I will not, my dear friend, give you any account of my voyage. You have before your eyes my letters to the minister ; and I flatter myself that you have not perused my narrative without interest. You will, no doubt, have remarked, that we are certainly the first navigators who have, in the same year, gotten as far as Mount Saint Elias, after having visited Easter Island, and the Sandwich group, and endeavoured to clear up several points of geography. Our charts, plans, journals, tables of route, &c.—every thing will prove to you, that we have neglected nothing, that could insure the accuracy of our different observations.

What remains for us to do this year is more difficult still ; all the information we have been able to procure in China concerning the part of the coast of that empire, which we are going to survey, consisting in a certainty, that the currents run with great violence through the straits ; that many shoals are met with there ; and that fogs prevail almost without intermission.

But as I know, that every thing is to be accomplished by patience and perseverance, these obstacles serve only to inflame my zeal, at the same time that I have the greatest confidence in my good fortune.

Avatcha, September 7, 1787.

The letter I am about to write to you, my dear friend, will be composed without any sort of order; but I shall endeavour to forget no part of what I have to say.

The minister has, no doubt, received, by the hands of M. Dufresne, the particulars of our voyage from our departure from France, to our arrival at Macao; and I am now about to deliver to M. Lefseps the sequel of my narrative from Macao to Kamtschatka.

I hope you will be satisfied with the part of our voyage between Manilla and Kamtschatka. It was the most new, the most interesting, and certainly the most difficult to perform, on account of the everlasting fogs which envelop the land in the latitudes we sailed through. These fogs are such, that I was obliged to consume a hundred and fifty days in exploring a part of the coast, which captain King, in the third volume of captain Cook's last voyage, supposes it possible to examine in the space of two months. I stayed, however, only three days in *Baie de Ternai*, two in *Baie de L'angle*, and five in *Baie de Castries*. I did not then lose any time; and, after all, I neglected making the circuit of the island of Chicha by sailing through the straits
of

of Sangaar. I should even have been desirous of anchoring at the north point of Japan, although such a step would have required much previous consideration, because it is probable, that my boat would have been stopped. An event of that kind, which may be looked upon as of trifling importance when a merchant vessel is concerned, might be regarded as a national insult, in case of the boats belonging to a king's ship. The taking and burning a few *sham-pans* would be but a poor compensation in dealing with a nation, that would not give a single European they might wish to make an example of for a hundred Japanese. However this may be, I had it not in my power to send a boat to the coast of Japan; and it is impossible for me to judge how I should have acted if the contrary had been the case.

I should find it difficult to describe to you the fatigue of this part of my voyage, during which I did not once undress myself; or did a single night pass without my being several hours upon deck. Figure to yourself six days of fog, with only two or three hours of clear weather, in very narrow seas, entirely unknown, and where the navigation, in consequence of the information we had received, embodied dangers and currents that did not always exist. From the place where we made the land upon the coast of eastern Tartary, to the straits that we discovered between the islands of Tchoka and Chicha, we did not omit taking the bearings of a single

point; and you may be assured that neither creek, nor port, nor river, escaped us. You may also depend upon it, that there are many charts of the coast of Europe less exact than those we shall bring with us on our return*; for the chart annexed to this may be said to be no better than a sketch, carefully drawn indeed, but liable to an error of perhaps ten or twelve miles of longitude in the position of some of the points. I have taken, besides, all possible pains to give a true idea of the nations which inhabit those islands and the adjacent continent.

We have then at length decided the famous question of the lands of Jessō, of Oku-Jessō, of the straits of Tessōy, &c. which has attracted so much of the attention of geographers.

The Russians had found it more convenient to expunge those two great islands from their charts, although they have ten times more surface than all their Kuriles put together, which are nothing but barren rocks, with a population not exceeding three thousand souls. The fogs hindered me from taking the bearings of the Kuriles lying north of Mareckan as far as the point of Lopatka; but I purpose making that survey on leaving the bay of Avatscha, although it appears to me of little importance. The

* Unfortunately these charts never came to hand, but shared the fate of our navigators; but what la Pérouse says of that which we possess, diminishes the loss that geography has sustained. *Fr. Ed.*

English having determined the position of the point of Paramousir, and we that of the north point of Mareckan, the intermediate islands cannot be laid down upon the chart with any material degree of error.

You will perceive, that our discoveries in this part connect wonderfully well with those of the Dutch, whose navigation was perhaps the most exact of any that had been made at the time of the *Kastricum's* voyage. You will find among the charts which I transmit to the minister the one you gave me of the discoveries of captain *Uries*. He did not suspect, that there was a sea behind the land he was coasting along, and still less, that there was a strait to the north of the village of *Acqueis*, abreast of which he was anchored. It may be inferred from his narrative, that the people of *Chicha*, and those of *Tchoka*, are precisely the same, since, after leaving *Acqueis*, and arriving at *Aniva*, he supposed himself to be still upon the selfsame island.

Another advantage that results to us from the voyage of the Dutch is, that it gives us the width of the island of *Tchoka* as far as *Cape Patience*, and beyond it; for the longitudes of the Dutch taken from the meridian of *Cape Nabo* are nearly exact.

Upon your chart, which I am going to send to the minister, I have laid down the straits we have

discovered in the midst of the mountains of the Dutch; and have traced our route in sight of Staten Island, the straits of Uries, and the Company's Land.

You will no doubt remark, in reading my narrative with the chart before you, that I could have followed the coast of Corea as far as the 42d degree, which would have been much more easy, and perhaps more brilliant than what I have done; but I thought it of much greater importance to determine the exact position of a point of Japan, which might give the width of the Tartarian sea, and even that of the island taken from Cape Nabo. I am certain you will approve of my mode of proceeding. You will however regret, that circumstances did not permit me to take a more extensive survey of the coast of Japan, and I regret it also; but do not forget, my dear friend, when you examine the operations of my voyage, do not forget the everlasting fogs, which forbid us to do as much in a month as might be done in three days under a clear tropical sky. Nor must you forget, that but for the fortunate storm that gave us forty-eight hours of a north wind in the Tartarian channel, we should not have arrived this year at Kamtschatka.

I must say once more, that although we have not done every thing, I am convinced that little more could have been done, and that our voyage may be reckoned next to those of the English; which was
not

not equally apparent to me at my return from the coast of America, because we had been forced to run down it with too much rapidity; and besides, several expeditions would not suffice to take a minute survey only, from Cross Sound to Port San-Francisco. Figure to yourself at every league inlets of a depth not to be measured, on account of their running inland to a distance which the eye cannot reach; currents similar to those of the *Four*, and of the *Raz* on the coast of Brittany; and almost continual fogs. After this you will conclude, that a whole season would scarcely suffice to examine twenty leagues of such a coast in every point; nor would I undertake to give, after six months hard work, an accurate and detailed account of the country comprized between Cross Sound and Port Bucarelli, much less as far as Cape Hector, which would require several years. I have been forced then to content myself with the laying down of the principal capes; the observing and tracing of the true direction of the coast from one point to another; and the determining of the geographical position of the islands that lie out a good many leagues from the continent. The immense plan of our voyage did not permit me to extend my labours any farther. Captain Cook did perhaps still less upon this coast: not that I wish to detract in the smallest degree from the merit of that celebrated navigator; but baffled by the wind, and confined like myself to a space of time which opposed his

following up his discoveries, he navigated at a greater distance from the coast than that at which circumstances allowed me to keep; and when he approached towards Cook's River and Prince William's Sound, it was with the hope, ill-founded I believe, but which he never abandoned, of finding an outlet to the north, and attaining his favourite object, a passage into either Baffin's Bay, or Davis's Inlet. His exploring of Prince William's Sound leaves much still to be done; but, I say again, surveys of this kind require much more time than either he or I could devote to our researches,

I procured at Manilla the journal of the voyage that the Spanish pilot, the famous Don Francisco-Antonio Maurelle, made in that quality to the north-west coast of America. Thus, by joining his journal to that of the first voyage made to those parts by the Spaniards, which Mr. Barrington has published in his miscellanies, and of which an extract is translated in the notes you had the goodness to collect for my instruction, we shall have all the secrets of Maurelle. I left that navigator at Manilla, commanding one of the ships of the new company destined to make a coasting voyage from Cavite to Canton. I send you a very minute plan of Port Bucarelli, and of the neighbouring islands, which I also obtained at Manilla.

The Spaniards in their second voyage penetrated as far as Prince William's Sound; and thinking themselves

selves upon the coast of Kamtschatka, were afraid every instant of being attacked by the Russians. I will not send you their general chart, because it would really do more harm than good to the progress of geography. Was it their intention to deceive us? or rather, did they deceive themselves? However this may be, they only saw the land near Port Bucarelli, and at the entrance of Prince William's Sound.

Together with charts of the second part of my voyage I send some particular plans drawn by lieutenant Blondela of the *Astrolabe*. That officer works with a degree of assiduity, intelligence, order, and neatness, which deserves the greatest praise.

You will find among the plans nine designs made by M. Duché. They are as true representations of nature as possible. M. Blondela also sends with them a view of the harbour of St. Peter and St. Paul, which is not taken from the same point of sight as that inserted in *Cook's Third Voyage*, and also a collection of drawings of the different vessels used at sea by the various people we have visited. This collection is highly interesting, and deserves the honour of being engraved.

I shall sail from Avatscha the first of October. We were received there with the greatest marks of kindness; but the Okhotsk ship was probably lost
on

on her passage*, and the governor of Kamtschatka, with the best inclination possible, was unable to furnish us with a single chest of flour. The want of that article will force me to put into Guam, to endeavour to get some there.

I will now give you the further plan of my voyage, subject however to be altered by circumstances, and by events that I cannot foresee.

You know, that I have already inverted a part of the first plan laid down in my instructions, because I was authorised to do so. I thought that it would be more expeditious to begin by the northern hemisphere, and to finish by the southern, since I was to terminate my excursions by putting into the Isle of France, situate south of the line. I confess to you, that I had some apprehension also of being anticipated by the English, who, before my departure, had announced the project of a new voyage of discovery. I was afraid for the coast of Tartary, &c. which was the only part truly new that I had to explore. I would not for all the world, that they should have gotten the start of me there.

On leaving Avatscha, I shall direct my course so as to visit the Kuriles, and determine their position as far as the Canal de la Bouffole. I shall then run down the parallel of 37 degrees, in quest of land said to have been discovered in that latitude

* See the *Journal of de Lesseps*. (Fr. Ed.)

by the Spaniards in 1610. I shall then stretch away to the islands north of the Mariannes, and even to the Archipelago of the Mariannes itself, as far as Guam, where I shall put in, in order to procure provision. I shall stay only five days at Guam, and thence shall shape my course for the Carolines, provided I have any hope of getting from those islands to Cape Choiseul of the Terre des Arfaides of Surville, and of passing through Bougainville's channel. I shall afterwards steer to the southward, where I may expect to meet with westerly winds, &c.

If, on the contrary, the information I may procure at Guam, and the remarks I may make during the run, should induce me to believe, that by exploring the Carolines I should get too far to leeward to be able to arrive at New Zealand by the first of February, 1788; in that case I shall abandon the Carolines, which are of little importance, and shall direct my course from Guam to New Zealand, keeping as much to the eastward as possible. I shall examine every thing that comes in my way; this track, which will be entirely new, making it probable, that I shall fall in with new islands, better worth notice, perhaps, than the Carolines. Either plan will permit me to arrive in Queen Charlotte's channel towards the first of February. Proceeding thence, I shall employ six months in visiting the Friendly Islands, in order to procure

procure refreshments, the south-west coast of New Caledonia, the island of Santa-Cruz of Mendana, the south coast of the Terre des Arfacides, and that of Louisiade, as far as New Guinea; and in this part I shall seek a different channel from that of the Endeavour. I shall employ the months of August, September, and a part of October, in visiting the gulph of Carpentaria, and the west coast of New Holland, taking care so to combine my operations, that it may be easy for me to get to the northward, in order to reach the tropic, and arrive at the Isle of France at the end of November.

I shall leave the Isle of France about the 25th of December, 1788. I shall direct my course towards Cape Circumcision, whence I shall return to France, either without putting into port at all, or else touching at the Cape of Good Hope, according as circumstances may require; and in June, 1789, I hope to arrive at Brest, forty-six or forty-seven months after my departure from that port.

Such is my new plan, in which, as you see, I cannot include the south coast of New Holland, or Van Diemen's Land, whence I should not be able to get to the Isle of France, unless by making the complete circuit of the first-mentioned island. To make that run, which would be much longer than the other, does not seem practicable. The state of our rigging, and even of our ships, forbids me to undertake it.

I have

I have not mentioned the Society Islands, because they are so well known, as no longer to afford food for curiosity. It is perhaps meritorious in the commander of an expedition, and it is certainly advantageous to a crew, to make a voyage round the world without touching at Otaheite. You know, besides, that the Society and Friendly Islands, with those of Mendana and others, that are well known, did not enter into the plan of my instructions, unless in case of necessity. I was, indeed, left at liberty to put into islands where I might be able to procure refreshments; but I either can, or will find means, to do without them. I will not, however, forget, that you recommended to me, as a matter of importance to the improvement of geography, to determine the true position of some of the points reconnoitred by Carteret, in order to have sure *data* for the correction of the errors of reckoning in the route of that navigator, who was unprovided with time-keepers, and appears besides to have made but few astronomical observations.

The same Antonio Maurelle, of whom I have already spoken, the Cook of the Spaniards, though in my opinion he is far inferior to the English Cook, made, at the beginning of the year 1781, a third voyage from Manilla to North America, in which he was desirous of getting into a high south latitude, that he might afterwards run to the eastward with the westerly winds prevalent in the environs of New Zealand;

Zealand; but this plan he could not execute for want of provision, and was obliged to steer northward towards the Marianne Islands, whence he took the ordinary track of the galleons in order to return to San-Blas. I send you the journal of this third voyage, in which Maurelle thinks he has made a great many discoveries, because he is ignorant of those made by modern navigators. It was my first intention to keep his journal, that I might see whether he had in reality met with any new islands in the neighbourhood of the Friendly group, a tract in which, according to the natives of those islands, a great many others exist, that have not yet been discovered by Europeans. But after having examined it, I perceived, that if I attempted to make any use of it, it could only serve to lead me into error. It is an almost shapeless chaos, an undigested narrative, in which the longitudes are calculated by a reckoning highly uncertain, and the latitudes are very ill observed.

I have procured an excellent chart of Manilla, and several other interesting plans. You may easily conceive, that this has not been done without great difficulty, and without the sacrifice of some money, for you know that the Spaniards are far from communicative. They want, however, more than they have to give. The other maritime nations have been eager to make Europe acquainted with what the Spaniards wished to hide so mysteriously from

from our knowlege. What I have seen at Manilla has confirmed me in the opinion I entertained of their pusillanimous, and useless circumspection. The governor possesses a chart comprising the whole space between Manilla and Kamtschatka; but I discovered, at first sight, that it was nothing else but the French chart of Bellin drawn upon a larger scale; and you well know the skill of our hydrographer, and the blunders that exist in a chart of which the inaccuracy exceeds that of all the others of the same author. The governor only indulged me with a momentary and distant sight of it; so much was he afraid lest my memory might be good enough to enable me to make a copy of it from recollection. His fears, I confess, struck me as so puerile, that forgetting for a moment his gravity, I could not help telling him, that I should shortly know more than he and all his charts could teach me.

If you will take the trouble of adding together my length of stay in each port, from the first of August, 1785, the day of my departure from Brest, till the seventh of September, 1787, the day of my arrival at Kamtschatka, you will see, that in that time I only passed five months and thirteen days at the different places I touched at, and that about twenty-one months were spent at sea; and you will hear with pleasure, that, notwithstanding the fatigue and privations incident to so long

long a navigation, not a single man has died on board my ship; nor have I a single person sick. The *Astrolabe* has lost an officer; but the disease of which he died was the fruit of his own imprudence, and was entirely unconnected with the hardships and dangers of the voyage. Bating this, the crew of that ship has been as healthy as my own. You may be assured, that the attention of captain Cook to his ship's company was neither greater, nor more constant, than that which M. de Langle and I pay to the preservation of the valuable men who are the companions of our labours; and if the good fortune we have had till now should last to the end of the campaign, we shall show, as captain Cook has done, that with care, and a proper regimen, seamen may be preserved from the scurvy, and other diseases that seem inseparable from long sea voyages. But the conclusions drawn hence will not apply to ships of the line with crews of eight hundred, a thousand, and twelve hundred men, who are often recruited by convalescents coming out of an hospital, and who cannot be fed, like a hundred men picked out for a particular expedition, upon Moissac flour of the first quality, and Cahors and Teneriffe wine at six hundred livres a ton; nor supplied with all the antiscorbutics that pharmacy and natural philosophy have found means to combine. Observe also, that the smallness of the space on board of large ships in proportion to the number

of the crew, does not allow each man to have a very large hammock ; and that the officers, however great their activity, are not numerous enough to attend to things that may appear trifling, such as the sailors changing their linen regularly, and in their presence, in order to preserve those brave fellows from that sloth, which is natural to mankind in regard to their personal cleanliness, but which they overcome when the question is the bearing of fatigue or the braving of danger. In addition to all these various and constant attentions, I have been careful to put in, without calculating the expence, at places where I was sure of procuring excellent provision for my crew ; such as Conception in Chili, Monterey in California, Macao, Manilla, &c. It appeared to me, that one of the experiments, intended to be made in this campaign, was to ascertain, whether men perfectly well-fed, and taken care of, can support the fatigues of the longest navigations in all climates, in all latitudes, in the midst of fogs, and under a burning sun. Hitherto I can answer in the affirmative ; but my voyage is still a long way from its close. May the constancy of our care and zeal be still crowned by the same success!

Avatscha, September 25, 1787.

I enclose to you, my dear friend, a memoir of M. Rollin, surgeon of the Bouffole. On reading it you will, no doubt, be of opinion, that ought to make a part of the collection of memoirs and other works, that our scientific men are busied about, each in his department. This M. Rollin is a man of the first merit, who during twenty-six months has not lost a single man, who has not now a single person in his sick list, and who is constantly employed in the examination of our aliments, in their preservation, and in their improvement; in every thing, in short, that belongs to preventive medicine, which I prefer very much to the curative

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A table of the latitudes and longitudes of the different points of our chart of the archipelago of Corea, East Tartary, &c. accompanies this. You will find the longitudes corrected for each meridian according to the mean of the longitudes obtained by distances when the moon was to the east, and from the longitudes calculated when it was to the west of the sun. This difference of circumstances has always produced, both in the Bouffole and Astrolabe, a difference of from twenty to twenty-six minutes in the result, which can only be attributed to an
error

error in the tables; and M. Dagelet thought that they required correction. You must, therefore, generally speaking, consider what we now send you relative to this part of the voyage, as a work that is not entirely finished, and that is susceptible of some small correction.

We have found here the tomb of M. de Lisle de la Croyère, over which I have placed an inscription on copper. Perhaps it is not known in France, that this learned man had descendants in Russia, who enjoy the consideration due to their ancestor. His grandson is a counsellor of the Siberian mines, an office from which he derives considerable emolument.

Avatscha, September 28, 1787.

I write to you again, my dear friend, to announce to you the receipt of packets that came to me by the way of Okhotsk, when I was at the eve of putting to sea *. I am treated with a degree of bounty and distinction, of which neither my zeal nor my services will ever render me deserving.

The orders I have just received will make no alteration in the plan I had laid down for the rest

* His commission of *Chef d'Escadre* was enclosed in those packets, which the Russian government undertook to convey to Kamtschatka. (Fr. Edit.)

of my voyage; except that I shall touch at Botany Bay, on the east coast of New Holland. I should have missed this desirable object, if I had begun by the southern hemisphere; but the great advantage I derive from the mode of proceeding I have adopted is the certainty of not having been anticipated on the coast of Tartary, &c. by any English vessel. I know, that all those that have been dispatched from India have passed to the eastward of Japan. The most considerable was lost upon Copper Island, near Behring's Island, and only two of the crew were saved, with whom I conversed, and who are to be sent over-land to Petersburg.

The ship which is building at Okhotsk, and which is destined by Russia to make discoveries in these seas, is hardly upon the stocks; and it is possible, that it may not be ready to put to sea for these three or four years to come.

Adieu! I shall set off to-morrow in good health, as well as all my ship's company. We would make a voyage round the world six times over, if it could be useful, or only agreeable to our country.

M. DAGELET.

Botany Bay, February 5, 1788.

I have begged M. de la Pérouse to insert in the packets addressed to the minister a table, which contains

tains the longitudes and latitudes observed on board, from our leaving Kamtschatka to the day of our coming to an anchor in Botany Bay. The commodore directs me to give you some information concerning this part of our labours (a thing very little necessary), and I obey him with the greater pleasure, because it is rather an opportunity of recommending myself to your friendly recollection, than an useful astronomical dissertation.

I have divided the table into four columns. The first contains the daily longitude of the time-keeper No. 19, calculated according to its rate of going determined at the bay of Avatscha. The second column contains the corrections that should be made in the longitudes given by No. 19, in order to obtain exact longitudes, such as we have determined them at different times by a great number of sets of lunar observations. I have done my endeavour to make them as accurate as possible from the days preceding our making the islands of Navigators to Botany Bay; and, I believe, that there is very little uncertainty in all that regards the truly geographical points of the lands we have seen. The third column contains the true longitudes, and the fourth the latitudes carefully observed,

M. DE LA PÉROUSE.

Botany Bay, February 7, 1788.

I shall never then, my dear friend, have any thing but misfortunes to announce to you; the utmost prudence being constantly disconcerted by events which it is impossible to foresee; but of which I have always had a sort of secret pre-sentiment. I confess, that I have to reproach myself, as to that unfortunate day the 11th of December last, with having yielded, almost in spite of myself, to the importunities, I may even say to the extraordinary obstinacy, of M. de Langle, who insisted upon it, that fresh water, water newly put on board, was the best antiscorbutic, and that his whole crew would be attacked by the scurvy before we could arrive in New Holland, if he did not lay in a stock of that article. I have arrived there, however, without sick, although my crew has constantly drunk water which has been long shipped; and I am perfectly convinced, that good water, new or old, is equally salubrious*. You will find in my journal the par-

* It is generally understood, that in long voyages, officers of ships often prefer for their own drinking the water shipped at the port where they fitted out, to all they take on board at those they touch at, and that they drink of the former till the end of the expedition.

ticulars

ticulars of our misfortune at the islands of Navigators. My sensibility is so profoundly affected by it, that it would be a torment to me to relate it over again. It will certainly appear inconceivable to you, that a man of the greatest sense, of the soundest judgment, of extensive information, and possessed of knowledge of every kind, should prefer to a vast and well-known bay, where the water was excellent, an unsafe place, where his long-boats remained aground at low water. Two thousand Indians, who surrounded them, tore them to pieces, after having massacred all the men who had not time to take refuge in our barges, which continued afloat at the edge of the reefs; while the ships were quietly making exchanges with the natives of the island, at two leagues distance in the offing, where most assuredly we were far from foreseeing the possibility of such an accident.

About thirty Indians were killed on shore on that fatal day, by the people in our long-boats, when they saw themselves assailed; and had I not restrained the just fury of our crews, I could have let them massacre five hundred more, either dispersed on board the two ships, or in the canoes that surrounded them. These canoes, which were bartering their provision along-side in perfect security, would have been sunk; but I thought that such a piece of barbarity would neither repair our misfortune, nor console us for our loss. We should only

allow mischief to be done, when it is absolutely necessary.

I could find nothing but a bad bottom of coral near that part of the coast where *Massacre* village is situate. The swell besides set right in shore. I am certain that our cables would not have held two hours, so that the two frigates might have been exposed to the greatest danger, without its being possible for them to approach within gun-shot of that infernal little bay; and I did not think, that the burning of five or six huts was a sufficient reason for exposing them to such imminent risk. I believe, however, that I should not have declined the adventure, if I had had any hope of recovering our long-boats; but the savages, after having almost destroyed them, drew up their remains upon the beach.

You will certainly approve my not having suffered this misfortune to change the plan of the remainder of my voyage; but it has prevented me from entirely exploring the Archipelago of Navigators, which I believe to be more considerable, better peopled, and abounding more in provision, than the Society Archipelago, including Otaheite, and ten times greater than all the Friendly Islands put together. We got sight of the Archipelago of Vavao, which is adjacent to the latter, and which the Spanish pilot Maurelle had perceived; but his account of the longitude is so erroneous, that it would be a source of
new

new confusion, if the islands in question were laid down according to it in the charts. Navigators will be preserved from all uncertainty on this head by our determinations, or rather by those of captain Cooke, who has so well described the group of Hapaeë, that it was impossible to doubt its identity with Maurelle's islands of Galvez.

You will find by my journal, that I got sight of Pylstaart and Norfolk Islands, and that I am arrived at Botany Bay, without a single person sick on board either of the ships. Some slight symptoms of scurvy, that had manifested themselves, yielded to the fresh provision we procured at the Islands of Navigators. I am well convinced, that the sea air is not the principal cause of this disease; and that it may with greater propriety be attributed to the foul air between decks, when a ship is not sufficiently ventilated, and still more to the bad quality of the provision. Is it to be supposed, that biscuit worm-eaten, as it sometimes is till it resembles a honey-comb, meat, of which the whole substance has been corroded by an acrid salt, and dry and decayed vegetables, can repair the daily waste of the human body? From the want of substantial food necessarily follows the decomposition of the blood, humours, &c. Accordingly, I consider spirit of scurvy-grass, and all the remedies in the surgeon's bottles, as mere momentary palliatives. Fresh provision, and fresh provision alone, either of the animal or vegetable kingdom,

kingdom, cures the scurvy so radically, that our crews; after feeding for a month upon the hogs we got by barter at the Islands of Navigators, arrived at Botany Bay in better health than at their departure from Brest, although they had only passed four and twenty hours on shore at Maouna. It is my opinion, that malt, spruce-beer, wine, coffee, four-kROUT, &c. are only antiscorbutics, because these several liquid or solid substances suffer little by keeping, and constitute a proper nourishment for man. They do not, however, suffice for the cure of the scurvy; but I believe, that they delay its attacks; and in that point of view the use of them cannot be too strongly recommended. I consider as subtilties in medicine all the fixed airs, &c. of the English and French doctors. They might be swallowed by whole bottles full without doing seamen a thousandth part of the good they receive from good slices of roast-beef, beef-steaks, turtle, fish, fruit, herbs, &c.

My theory concerning the scurvy may then be reduced to the following aphorisms, which are not to be found among those of Hippocrates:

Food of any kind proper for man, and capable of repairing the daily waste;

Fresh air introduced as often as possible between decks, and in the hold;

The humidity occasioned by fogs incessantly counteracted by fumigation, and even by pans of burning coals;

Cleanliness, and a frequent examination of the sailors clothing;

Regular exercise, and sufficient sleep; without, however, giving any indulgence to sloth.

I confess, that I have no faith in captain Cook's observations concerning the spoiling of water in casks. I think, that water of a good quality, when taken on board, after having undergone two or three decompositions known to all seamen, which occasion it to stink for a few days, becomes excellent again, and as light perhaps as distilled water, because all the heterogeneous matters are precipitated, and form a sediment at the bottom of the cask. At the moment I am writing to you, although we are very near a pretty good watering place, I am drinking the water of *Port des Français*, on the coast of America, and find it excellent. This erroneous opinion, to which I never subscribed, was, notwithstanding, the cause of our misfortune at the island of Maoua. But how is it possible to contend with a commander of great experience, who assures you, that all his crew will be attacked with the scurvy in less than a fortnight, unless he take fresh water on board?

As M. Dagelet has written you an account of his observations, I shall be silent on the subject. It will suffice to say, that the combination of our two means, astronomical observations and time-keepers, has completely resolved the problem. We have constantly

constantly navigated with less error of longitude, than was common in latitude ten years ago, when it was customary to observe with wooden octants, and perhaps with four times less than when the cross-staff and old-fashioned quadrant were in use.

The death of M. de Langle will make no change on board the *Astrolabe* as to astronomical observations. For near a year they have been solely made by M. de Lauriston. He is a young officer of the greatest merit, and in point of accuracy may dispute the prize with our astronomers. I know, besides, that his journal of observations is kept in the best order possible.

As the English have fixed their establishment at Port Jackson, they have entirely abandoned Botany Bay. I have a kind of entrenchment on shore with pallisadoes, in order to construct our long-boats in safety: they will be finished at the end of the month. This precaution was necessary against the Indians of New Holland, who, although very weak, and in no great numbers, are, like all savages, very mischievous, and would burn our boats if they had the means, and could find a favourable opportunity. They threw spears at us after having received our presents and our caresses. My opinion concerning barbarous nations was long since fixed; and my voyage has only served to confirm it.

J'ai trop, à mes périls, appris à les connaître.

I am,

I am, however, a thousand times more angry with the philosophers who extol the savages, than with the savages themselves. The unfortunate Lamanon, whom they massacred, told me, the very evening before his death, that the Indians were worthier people than ourselves. Observing rigidly the orders conveyed by my instructions, I have always treated them with the greatest mildness; but I confess to you, that if I were to undertake another voyage of the same kind, I would demand different orders. A navigator, on quitting Europe, ought to consider the savages as enemies, very weak indeed, and whom it would be ungenerous to attack, and barbarous to destroy; but whose assaults he has a right to prevent, when authorized to do so by well-grounded suspicions.

In my letters from Kamtschatka I have communicated to you the plan for the remainder of the expedition, upon which I was obliged to fix, in order to arrive in France in June 1789. Neither our provision, nor our rigging, nor even our ships, would permit me to prolong the period of my voyage, which, I should imagine, will be the most considerable ever made by any navigator, at least as to length of route. I have still a great many interesting things to do, and very mischievous people * to visit. I do not answer for not firing a few

* Those of the islands situate to the south-east of New Guinea, discovered by the French in 1768 and 1769.

cannon-shot at them; for I am convinced, that fear alone can prevent the effect of their bad intentions.

I shall sail from Botany Bay on the 15th of March, and shall take care to lose no time till the month of December, when I expect to arrive at the Isle of France.

You will find in the sequel of my journal a plan of seven of the islands of Navigators. The islanders enumerated ten; and to complete the archipelago, I think it would be necessary to include Quiros's Island of the Handsome Nation, with those of Cocos and Traitors; but of this I am not positively sure. The last two are very small, and of little importance; but I should not be surprised, if the islands of Maouna, Oyolava, and Pola, contained together four hundred thousand inhabitants. Maouna is much smaller than the two others; and yet in the space of four and twenty hours we procured there five hundred hogs, and an immense quantity of fruit.

I should have been glad to add to the plan of the Islands of Navigators that of the Friendly Archipelago, increased by the addition of Vavao, Latté, &c.; but to my great regret it is not finished, or will it be before my departure. The want of the plan will be in some measure compensated by the latitudes and longitudes of those islands, which you will find in the tables. They are more exact than those I have given in the text of my journal. Although

though historical, it was written as the events took place, and the longitudes were inserted before they had been submitted to a final examination, in consequence of which they frequently underwent correction.

M. de Clonard now commands the *Astrolabe*; and M. de Monti has taken his place on board the *Bouffole*. They are both officers of the greatest talents. In M. de Langle we have lost one of superior merit. He was endowed with the most excellent qualities, and I never could discover any fault in him but that of being obstinate, and so inflexible in his opinion, that there was no refusing to follow it without quarrelling with him: he rather tore from me, than obtained, the permission that was the cause of his death. I should never have yielded, if the report he made of the bay where he perished had been exact; or an I conceive how it was possible for so prudent and so enlightened a man to be so grossly deceived.

You see, my dear friend, that I am still much affected by that event. In spite of myself, I return to it incessantly.

EXTRACTS

Of Letters written by M. de la Pérouse to M. de la Touche, Assistant-Director of the Ports, and Captain in the French Navy; and by M. de Lamanon to M. de Servières.

M. DE LA PÉROUSE.

Macao, January 6, 1787.

HERE I am, my dear la Touche, being at last safe arrived in China, eighteen months after my departure from France, of which fifteen have been passed under sail. We have not lost a single person by disease; or have we a single man sick on board either of the ships; but by this time you are, no doubt, acquainted with the misfortune we met with on the coast of America. For the particulars of my voyage I refer you to the complete narrative, which I am now forwarding to the minister.

Although we have already made almost the circuit of the globe, we are still but at the beginning of the expedition. As soon as the fair weather sets in, I shall sail, in order to run down the Chinese and Tartarian coasts as far as Kamtschatka. This is certainly the most difficult navigation that can possibly be undertaken. During the three or four
days

days that I have been at Macao, I have gained some little information, and am told that the different channels between China and Japan, and the coast of Tartary and the Kuriles, are full of shoals, that the currents are very strong, and the fogs almost everlasting. You see, then, that our task is not an easy one; but we will execute it, or perish.

I have been anxious to send a complete account of our voyage till our arrival at Macao, as well as our charts, that in case of our meeting with any misfortune, the beginning of our labours, which I think interesting, may not be lost. I intend to sail hence for Manilla at the end of the month, and from Manilla for Kamtschatka on the 10th of April. Adieu! my best wishes attend you.

Kamtschatka, September 22, 1787.

I have already, my dear friend, made almost the circuit of the globe, without hearing from you. I do not accuse you, because nobody has written to me; but I complain because my disappointment renders me very unhappy, and because every one has a right to express what he feels. I give you no particulars of my voyage, as you have it in your power to see every thing; and as you are a seaman, nobody can better judge than yourself, how much the navigation we have just performed was

every way difficult and dangerous, by reason of currents, fogs, and storms, and of nations among whom no strangers can land, or find assistance in case of need. No European before us ever passed to the westward of Japan. It was known to be an island; but nobody ever knew whether the channel that separates it from Corea were navigable for large vessels. The account of Kæmpfer was calculated to inspire fear as to the navigation of these seas, of which he only spoke after the report of the Japanese; while Father des Anges's straits of Tessoy were not likely to inspire much courage, since, according to him, they are full of weeds, which hinder ships from passing. We have swept away all this geographical trash, found straits most assuredly new, and are at length arrived at Kamtschatka, whence I shall sail for the southern hemisphere on the 1st of October, 1787, not expecting to arrive in France till the month of June, 1789.

I have read, my dear friend, the new code of maritime regulations. I protest that I think it perfect; and I could wish that, like the ark of the Lord, it were expressly forbidden by law to make the least alteration in it, till two centuries after the first year, when a few ministerial letters might be necessary by way of interpretation. I find in it *gardes de la marine* so brought up as to be seamen; officers who
have

have nothing to think of but their profession; and directors who have only to attend to their particular occupations; troops so constituted as to serve usefully on board of ship, where there will always be infantry enough, when we have no war in Germany; and lastly, a centre of unity in the commander, which insures the execution of the plan, the only one good, true, and rational. What I have so long desired has at length taken place. We have at length a commanding marine*, and an auxiliary marine, of which last the interest has been so consulted as to spare it all humiliation, with a mode of educating young people, which may, perhaps, render them a little rude in their manners; but it will never make them proud, and will certainly add to their energy of mind. I wish I had been brought up like the new naval students, whose name it was right to change; for nothing in the old schools was worth preserving.

* By the French naval code, here alluded to, officers of merchant ships were permitted to enter into the navy, but never could rise to any command. Hence they were called *la marine auxiliaire*, while the superior class, consisting of nobles, was denominated *la marine commandante*. T.

M. DE LAMANON.

The Chinese Seas, January 1, 1787.

Though you have so many correspondents, my dear Servières, you have not any in China. You are, however, advantageously known, and have friends, there. Can you doubt it when I tell you that it is from Macao that I am writing? A thousand times have I regretted that you were not one of our party—a thousand times have I rejoiced at it. The enjoyments I have had, since our departure, have been great. I work more than twelve hours a day, and yet I am never before-hand with my work: fish to anatomize; quadrupeds to describe; insects to catch; shells to class; events to relate; mountains to measure; stones to collect; languages to study; experiments to make; a journal to write; and nature to contemplate—I would that for all this I could multiply my existence twenty times over. With your activity and good health, you would have partaken of our labours, and of our enjoyments; but after all our pleasures, figure to yourself what must be the situation of a geologist obliged to pass three years out of four at sea. Between the tropics the stomach loses its powers, and excessive perspiration fatigues; in cold climates fogs oppress us; to this add the for-

row we felt at the loss of our friends, the dangers we ran, which have been great, and you will confess that science, as well as religion, has its martyrology. Health and hope, however, never forsook me, and I am now taking a moment's breath, after being a little fatigued with having gone ten thousand leagues. I have not yet had leisure to feel a moment's *ennui*. Mongès and myself have each our province: his consists of birds, a portion of insects, the analysis of stones and waters, and some objects of natural philosophy; mine includes geology, quadrupeds, fishes, shells, other aquatic animals, the compilation of the meteorological observations, the natural history of the sea, &c. M. de la Martinière, who is on board the *Astrolabe*, has the plants, and also amuses himself with insects, birds, and fishes. To arrange all these materials, and to apply them properly, require meditation and labour.

Preserve your health, your amiable cheerfulness, and rely for ever upon your friend.

P. S. I expect from you, at the Isle of France, or at the Cape of Good Hope, a long letter, which will inform me of the most important literary and political intelligence.

L E T T E R

*From M. de la Martinière to the Minister of
Marine*.*

Road of Santa Cruz, at Teneriffe, August 29, 1785,

SIR,

IF, according to the example of most botanists, who have visited foreign countries to obtain a knowledge of their productions, I should confine myself to the collection of a multitude of plants, and the arrangement of them in an herbal, I should but imperfectly fulfil the commission with which I have been entrusted. In my opinion, the botanist on his arrival in a foreign country ought to examine all its vegetable productions, form an exact catalogue of them, gain a knowledge of the soil, its exposure and temperature, and, in short, to judge, from the analogy between the vegetation of different countries, what are the productions which may be advantageously

* I received this piece and the following when the work was finished; I was therefore unable to arrange them according to their dates; they appear to me, however, of too much importance to be omitted.—(*Fr. Ed.*)

cultivated

cultivated in France, and thereby conduce to the national utility.

These were the principles that directed my observations during our stay at Madeira and Teneriffe, and our tour to the Peak. I there met with many plants which would certainly thrive if they were cultivated in the province of Languedoc. I conclude so from observing several plants which are indigenous to that province, growing here among others of which France is entirely destitute, and which, nevertheless, might be of considerable service.

If, as I hope, we shall be able to accustom them to our climate, I shall think that I have rendered an important service to this province. You know, sir, that it is absolutely deprived of wood; it is, therefore, to remedy this inconvenience, that I propose the cultivation of the following plants, the seeds of which I have the honour of transmitting to you.

The number of these is confined to seven or eight, of which several are of the genus *genista*. One of these in particular I should wish to have a full trial, since, beside furnishing a great deal of wood, it also affords an excellent food for goats. The natives of Teneriffe offer us an example of this. They suffer herds of goats to wander during the whole year, in the district where this plant

grows abundantly: it forms their sole food, and they seem to thrive very well upon it. This shrub, commonly called broom, is named by Masson, in the supplement to Linnæus, *spartium supranulium*; it comes to perfection on the mountains, on the side of the port of Orotava, in the road to the Peak. This species is certainly the largest of any hitherto discovered; I have met with several, the whole circumference of the branches of which exceeded eighty feet. The trunk was nearly the thickness of a man's body, and the branches in proportion. It grows to the height of ten or twelve feet, and when in blossom makes a very beautiful appearance, the branches being very numerous and thick set with flowers.

The other plants which appeared to me capable of being cultivated with advantage in the south of France, are;

1. A species of asparagus, a beautiful shrub very common in this country. It is called by Linnæus *asparagus declinatus*.
2. A species of cistus. *Cistus villosus*, Linn.
3. An euphorbium of the Canaries. *Euphorbia Canariensis*, Linn. which grows upon the bare rocks, and is used as fire wood. The vegetative force of this plant is so considerable, that a single trunk throws out more than a hundred and fifty branches of the thickness of the arm, and twelve feet high. A single plant would furnish

furnish a man with fire-wood for the whole winter. The proper soil, in my opinion, for these plants would be the neighbourhood of Montferrier, a small village about a league from Montpellier, round which is a tract of uncultivated land, commonly known by the name of *Garrigues*. I am induced to think, that these different plants would flourish there very well, since that country, like the isle of Teneriffe, is volcanic.

The most proper person, in my opinion, to make these experiments, and who will, with pleasure, undertake the care of them, is M. Gouan, professor of medicine at Montpellier, and an excellent botanist, under whom I took the degree of M. D., and for whom I shall always entertain a high respect. If you will transmit to him part of the seeds, which I have the honour to send, I shall consider myself under great obligations.

I have also directed to you two small cords, which were made of the bark of the banana tree, as well as several parcels of the wood of the same tree, which I wish to be examined as soon as possible.

If hitherto the attempts have been unsuccessful to fabricate cloth and cord from this bark, it is probably owing to want of skill in the preparation of it: the following, therefore, I recommend as a better method.

method. The bark of this plant ought not to be steeped like hemp, because it is very succulent, and the pulp is apt to bring on a putrefaction of the ligneous part, which it is essential to preserve; whereas, if the outer covering were taken off in slips, and afterwards pressed, in order to get rid of the moisture and pulp contained in every layer, the ligneous part might be readily procured without injury. It might then be steeped for some time in water, in order to undergo a slight degree of putrefaction, which would render it more soft and pliable, and capable of being applied to all the uses of hemp. It would also possess the peculiar advantage, on account of its concentric layers, which are ten or twelve in number, of supplying thread of different degrees of fineness.

You may yourself judge, sir, of the strength of these cords; they were made on board the ship, and I shewed them to M. de Langle, who is persuaded that they may be turned to great advantage. He informs me, that the principal experiment to be made, would be to lay one of them for a considerable time in water, and then try whether it remain of the same strength as before. This experiment I purpose to make*.

* For the reasons before mentioned, the voyage of Pérouse was not capable of furnishing a great number of new vegetables; among those, however, which were sent home by the gardener

gardener Collignon, ought to be mentioned a beautiful herbaceous plant, which flowered and matured its seeds in the botanical garden in 1789. Jussieu, who first observed it, has made a new genus of it belonging to the family of *nyctages*, to which he has given the name of *abronia*. See Gen. Plant. p. 448. Lamarck has given a good figure of it in his *Illustrationes Generum*, plate 150. The native country of this plant is California.—(Fr. Ed.)

E X T R A C T

*Of a Letter from M. de Lamanon to M. Condorcet,
Perpetual Secretary to the Academy of Sciences.*

AFTER a passage of two months we arrived at St. Catherine's island, where we made no longer a stay than was necessary to take in wood and water. From Teneriffe we saw no other land than the isles of Martin Vas, which are uninhabited, and Trinidad, which is occupied by a Portuguese establishment, that succeeded one formed there by the English. The garrison consists of about two hundred men, and no women. They are supplied with provision every six months; for this island, which is a mere rock of basaltes, is not capable of being cultivated. I came within hail of it, but it is surrounded with reefs of rock, and we had orders from our captain not to attempt a landing. When you shall receive this letter, that which I wrote to you from Teneriffe will probably have also arrived. Being under the necessity of writing before we came to anchor at St. Catherine, lest I should have no time afterwards, I could not send you much news;
our

our ships sailed but heavily, a circumstance which will prolong our voyage; which, I am informed, will be, on the whole, near three years and a half. We shall have kept the sea longer than any of our preceding navigators, for we continue but a very short time at the places where we touch. We are, it is true, pressed for time, in order to double cape Horn during the favourable season. This long continuance at sea is not very favourable for mineralogical observations; but I consider the object of my voyage as by no means confined to this branch of science. I am in good health, and work twelve hours in the day without fatigue, notwithstanding the rolling of the ship. Instead of lying in bed till nine or ten o'clock, as I used to indulge in, I every morning see the sun rise.

I enclose a memoir on the results of the barometrical observations taken hourly from 1° north, to 1° south of the line. It appears, that the combined actions of the sun and moon produce a flux and reflux of the atmosphere, causing the variation of a line in the barometer. It ought to be only one third of a line, according to the calculations of M. de la Place: it is true, that I have elsewhere read, that, according to the calculations of the same philosopher, the barometer at the equator, by the action of the moon, ought to vary half a line, so that there seems to be a doubt on the subject. There ought,

ought, indeed, to be some degree of uncertainty in the grounds of this calculation, if we be to judge of the opinions of the greatest mathematicians, concerning the flux and reflux. Some say, that, if the sea were of quicksilver, the flux and reflux would be the same; according to others, however, there would be a difference. It belongs to your first-rate mathematicians to examine this matter afresh, and determine our belief.

I made the magnetical observations with much care: it is not, however, worth while to send you the particulars of them. I observed for twenty-four hours successively the dip of the needle, in order to ascertain the moment when we passed the magnetic equator, and I found the true zero of inclination on the 8th of October, at eight in the morning, in about $10^{\circ} 46'$ south latitude*. I made observations on steel bars laid loose on the vessel, on others which were fixed, on the oscillations of the horizontal and perpendicular needle, on the weight which a magnet is capable of supporting according to the latitude: in a word, I hope that I have collected more facts on this subject, than have for a long time since been procured. The general results only are intended to be printed in the account of the voyage.

* See tables of the course of the Bouffole, October 8, 1785.—(Fr. Ed.)

We have had no instance of sickness on board our vessel, except M. Blondela. We are very well satisfied with each other, and especially with M. de la Pérouse. I have particular reason to speak well of him from his readiness in supplying me with any thing that I may want. The department of M. Mongès comprehends ornithology, microscopic animals, and cryptogamous plants. Mine includes ichthyology, entomology, and conchology. With regard to mineralogy, we have not yet determined our respective limits: however, from the turn of our studies, the geological observations will fall to my share, and the details of mines and chemical analysis to the abbé Mongès. I am also charged with the meteorology and magnetic observations. While I lived at Salon I staid at home one year, in order to lay up money for the expences of a journey for the next; so that I devoted one year to reflection, and the other to local observations. At present I compare my observations while we are at sea, and make new ones at every place where we touch. My mode of life has, therefore, scarcely undergone any change.

When you shall have an opportunity of seeing M. le Roy, tell him, that on October 25, we had a very remarkable storm. The sky was all in flames; I employed part of the night in observing it,

it, and had the pleasure of seeing three ascending thunderbolts. They rose from the sea like an arrow; two of them in a perpendicular direction, and the third at an angle of about 75° . The lightning was less forked than in France. Towards the conclusion of the storm I saw a luminous point on the end of the conductor; it continued a quarter of an hour, and is called St. Elmo's fire. It did not make its appearance on the other masts. I am always recommending the conductor; it is to be taken down at St. Catherine's, where we shall be tomorrow; I shall, however, be able, perhaps, to obtain a respite for some time longer. M. de la Pérouse appears almost convinced of its utility. I know not who has told him, that the English have left it off after having found it very inconvenient. Forster, however, mentions an instance in which it was of great use to captain Cook's ship. I believe, that we shall compromise the business, by taking it down during heavy gales, for fear of breaking it, and replacing it at the approach of a thunder-storm.

I have directed to M. Fleurieu the memoir which I have mentioned in this letter, because I know not whether the minister would choose it to be published before our return.

P. S. We have been very well received at St. Catherine, where we found abundance of every thing.

thing. I have made a large collection of insects, quadrupeds, fish, stones, &c.

The inhabitants are good-natured, and the governor shewed us much civility.

On board the Bouffole, off St. Catherine,
Nov. 5, 1785.

OBSERVATIONS

Made during the run from the first degree of north latitude to the first degree of south latitude, in order to discover the flux and the reflux of the atmosphere;

BY M. DE LAMANON.

It has been already observed, that within the tropics the mercury of the barometer continued constantly higher in the syzygies than in the quadratures of the moon; but it was not suspected, that, by means of this instrument, the flux and reflux of the sea could be not only observed, but even measured with considerable exactness. It was reserved for the academy of sciences, to demonstrate their possibility. The following are the words of its instructions, which M. de la Pérouse put into our hands at the beginning of our voyage.

“ The Academy also requests the navigators to
“ keep an exact account of the barometer, at different hours of the day, in the neighbourhood of
“ the equator, with the view of discovering, if
“ possible,

“ possible, how much of the variation of that instru-
“ ment is due to the action of the sun and the
“ moon ; that quantity being then at its maximum,
“ while the variations produced by ordinary causes
“ are at their minimum. It is needless to add,
“ that these delicate observations ought to be
“ made on shore, and with the greatest possible
“ precaution.”

Having been present at the reading of this article, in an extraordinary sitting of the academy, I had procured an excellent barometer, made by the sieur Fortin, so as to shew a variation of $\frac{1}{50}$ of a line. This intelligent artist was pointed out to me by M. Lavoisier. It was thought that I should make use of this instrument constructed for this express purpose, on which account the academy desired in its instructions, that the observations should be made on shore ; but having met at Brest with a marine barometer, made by Nairne, and described in the voyage of the celebrated Cook, I found that it was fully calculated to make exact observations even at sea. Notwithstanding the rolling of the vessel, the mercury has hitherto remained immoveable, owing to the excellent suspension of the barometer, and to the capillary tube which is adapted to the common tube. By means of the nonius, which is added to it, variations as small as $\frac{1}{100}$ of a line are readily perceived. From daily observations of this

F f 2

barometer

barometer at sun-rise, noon, and sunset, I remarked, that from the $11^{\circ} 2'$ of north latitude, to $1^{\circ} 17'$, it experienced a very regular motion. It was always at its maximum of elevation about noon, then descended till the evening, and rose during the night. It was on September 27th, that we reached the latitude of $1^{\circ} 17'$.

On the 28th, before day-break, I began the series of observations, for which I had made preparations the evening before, and I repeated them every hour till October 1st, at six o'clock in the morning, that is, more than three days and three nights. M. Mongès supplied my place during the six hours that I devoted to rest. I thought it at the same time necessary to observe the thermometer in the open air, and that attached to the barometer, as well as the hair hygrometer. I also noted down at the same time the directions of the wind, the course of the vessel, and the rate of our sailing, estimated by the log. I also took the same opportunity of observing the temperature of the sea, and the dip of the needle.

The results of these observations appear to me very curious. The barometer gradually ascended for six hours, and then descended during the next six; rose again during the six following, and so on, as may be seen from the following table, extracted from my journal,

Sept.

	h.	h.		lines.
Sept. 28.	from	4 to 10 in the morning	ascended	- 1.9
	—	10 to 4 in the afternoon	descended	- 1.2
	—	4 to 10 at night - -	ascended	- 0.9
Sept. 29.	—	10 to 4 morning - -	descended	- 1.3
	—	4 to 10 morning - -	ascended	- 1.5
	—	10 to 4 afternoon - -	descended	- 1.3
	—	4 to 10 night - - -	ascended	- 1.0
Sept. 30.	—	10 to 4 morning - -	descended	- 0.7
	—	4 to 10 morning - -	ascended	- 1.4
	—	10 to 4 afternoon - -	descended	- 1.4
	—	4 to 10 night - - -	ascended	- 1.0
Oct. 1.	—	10 to 4 morning - -	descended	- 0.8

The flux and reflux of the air at the equator is, therefore, so much as to cause a variation in the barometer of about 1.2 line of the English division, which supposes a rise and fall in the atmosphere of about a hundred feet. The combined action of the sun and moon, according to M. Bernoulli, causes only an elevation of seven feet in the sea at the equator. It is true, that there are corrections to be made, first, for the difference in temperature of the mercury in the barometer; secondly, perhaps for the difference in temperature of the air; and, thirdly, for the seven feet of rise and fall of the sea, on which we were placed while making the observations.

I leave it to more able philosophers than myself to ascertain, whether or not this observation be

agreeable to theory and calculations. Be this, however, as it may, it is evident from these observations, that meteorologists allow far too much to the action of the moon, as I formerly suspected in my memoir on the fog of 1783, printed in the *Journal de Physique*, and which had been mathematically demonstrated by the author of *La Cosmographie Elementaire* (M. de la Place). It would, however, be wrong to reckon as nothing the action of the moon, for by causing a variation of 1.3 line in the barometer, it may influence the atmosphere, and occasion sensible alterations.

I think it right to submit to the inspection of the academy my observations in the state that they were made; I accordingly add them to this memoir. It should be observed, that on account of the change of level in the reservoir of the barometer, it will be necessary to add a line to the various heights of the mercury marked in the table.

TABLE

TABLE

OF OBSERVATIONS MADE EVERY HOUR, FROM 1° NORTH TO 1° SOUTH.

DATE.	Direction of the Vefel.	Rate of Sailing.		Barometer.		Therm. of the Barom.		Hair Hygrom.	Direction of the Wind.	Weather.
		Leagues.	Degrees.	Inch.	Lines.	Degrees.	Degrees.			
Sept. 28--4 morn.	W. by S.	1 $\frac{1}{2}$	19 $\frac{1}{2}$	29	8.9	20	97		S.	Fine, cloudy in the horizon, lat. 1° 5' N.
5	W. S. W.	1	19 $\frac{1}{2}$	29	8.9	20	97		Do.	Do.
6	W. S. W.	1	19 $\frac{1}{2}$	29	9.1	20	97 $\frac{1}{2}$		S.	Do.
7	W. S. W.	1	20	29	9.3	21	98 $\frac{1}{2}$		S.	Do.
8	W. S. W.	1	20	30	0.5	21	97		S.	Do.
9	W. S. W.	1	20 $\frac{1}{2}$	30	0.8	21	96		S.	Do.
10	W. S. W.	1	20 $\frac{3}{4}$	30	0.8	21	95 $\frac{1}{2}$		S.	Blue sky, sprinkled with clouds.
11	W. S. W.	1	21	30	0.6	21 $\frac{1}{2}$	95 $\frac{1}{2}$		S.	Do.
noon	W. S. W.	1	21	30	0.2	21 $\frac{3}{4}$	95 $\frac{1}{2}$		S.	Do.
1	W. S. W.	1	21	30	0	21 $\frac{1}{4}$	95 $\frac{1}{2}$		S.	Do.
2	W. S. W.	1	21	29	9.7	21 $\frac{3}{4}$	97		S.	Cloudy.
3	W. S. W.	1	20	29	9.6	21	98		S.	Do.
4	W. S. W.	1	20	29	9.6	21	98		S.	Do. with drizzling rain.
5	S. W. by W.	1	20	29	9.6	21	98		S. by E.	Cloudy.

DATE.	Direction of the Vessel.	Rate of Sailing.	Thermom.		Barometer.		Therm. of the Barom.	Hair Hygrom.	Direction of the Wind.	Weather.
			Degrees.	Leagues.	Inch.	Lines.				
6	S. W. by W.	1	20	1	29	— 9 8	21	97 $\frac{1}{4}$	S. by E.	Cloudy.
7	S. W. by W.	1	20	1	30	— 0.1	20 $\frac{1}{2}$	99	S. by E.	Do.
8	S. W. by W.	1	20	1	30	— 0.4	20 $\frac{1}{2}$	99	S. by E.	Do.
9	S. W.	1	20	1	30	— 0.5	20 $\frac{1}{2}$	98	S. S. E.	Do.
10	S. W.	1	19 $\frac{3}{4}$	1	30	— 0.5	20 $\frac{1}{2}$	98	S. S. E.	Do.
11	S. W.	1	19 $\frac{1}{2}$	1	30	— 0.3	20 $\frac{1}{2}$	98	S. S. E.	Do.
midnight	S. W.	1	19 $\frac{3}{4}$	1	30	— 0.1	20 $\frac{1}{2}$	98 $\frac{1}{2}$	S. S. E.	Do.
Sept. 29--1 morn.	S. W.	2	19 $\frac{3}{4}$	2	29	— 9.7	21	98 $\frac{1}{2}$	S. S. E.	Do. with a hollow sea.
2	S. W.	3	19 $\frac{3}{4}$	3	29	— 9.6	21	97	S. S. E.	Do.
3	S. W.	3	19 $\frac{1}{2}$	3	29	— 9.4	21	100	S. S. E.	Do. some drops of rain.
4	S. W.	3	19 $\frac{1}{2}$	3	29	— 9.3	21	100	S. S. E.	Do.
5	S. W. by W.	1	19 $\frac{1}{2}$	1	29	— 9.2	21	101	S. S. E.	Do.
6	S. W. by W.	1	19 $\frac{1}{2}$	1	29	— 9.2	20	101	S. S. E.	Do.
7	S. W. by W.	1	19	1	29	— 9.7	20	101	S. S. E.	Do.
8	S. W. by W.	1	19	1	30		21	99	S. S. E.	Cloudy.
9	S. W.	1	20	1	30	— 0.7	21	98	S. S. E.	Do.
10	S. W.	1	20 $\frac{1}{4}$	1	30	— 0.7	21	96	S. S. E.	Sun pale.
11	S. W.	1	21	1	30	— 0.3	22	95 $\frac{1}{2}$	S. S. E.	Sky blue with clouds.
noon	S. W.	1	21	1	30	— 0.2	21 $\frac{1}{2}$	95 $\frac{1}{2}$	S. S. E.	Cloudy.
1	S. W.	2	20 $\frac{1}{2}$	2	29	— 9.6	21	93	S. S. E.	Do.
2	S. W.	2	20 $\frac{1}{2}$	2	29	— 9.5	21	99	S. S. E.	Do.
3	S. W.	3	20 $\frac{1}{2}$	3	29	— 9.4	21	98	S. S. E.	Do.

DATE.	Direction of the Vessel.	Rate of Sailing, out of doors.	Thermom.	Barometer.	Therm. of the Barom.	Hair Hygrom.	Direction of the Wind.	Weather.
		Leagues.	Degrees.	Inch. Lines.	Degrees.	Degrees.		
4	S. W.	$\frac{2}{3}$	$20\frac{1}{2}$	29-9.4	21	98	S. S. E.	Sky blue, with clouds.
5	S. W.	1	$20\frac{1}{2}$	29-9.4	21	98	S. E. by S.	Do.
6	S. W.	1	20	29-9.4	$20\frac{1}{4}$	98	S. E. by S.	Do. passed the line, lon. by the time-keepers, $181^{\circ} 40'$.
7	S. W.	1	20	29-9.3	$20\frac{1}{2}$	98	S. E. by S.	Fine, hollow sea.
8	S. W.	1	20	30-0.2	$20\frac{1}{2}$	97	S. E. by S.	Do.
9	S. W.	1	20	30-0.4	$20\frac{1}{4}$	98	S. E. by S.	Do.
10	S. W.	$\frac{2}{3}$	20	30-0.4	20	99	S. E.	Do.
11	S. W.	$\frac{2}{3}$	20	30-0.4	20	99	S. E.	Cloudy.
midnight	S. W.	$\frac{2}{3}$	20	30-0.4	20	99	S. E.	Do.
Sept. 30 - 1 morn.	S. W.	$\frac{2}{3}$	$19\frac{1}{2}$	30-0.3	20	$98\frac{1}{2}$	S. E.	Fine, some clouds.
2	S. W.	1	$19\frac{1}{4}$	30-0.2	20	$98\frac{1}{2}$	S. E.	Fine, halo round Jupiter.
3	S. W.	1	$19\frac{1}{4}$	29-9.4	20	99	S. E.	Fine, clouds in the horiz.
4	S. W.	$\frac{2}{3}$	19	29-9.8	20	99	S. E.	Do.
5	S. W.	$\frac{2}{3}$	19	29-9.7	20	$91\frac{1}{2}$	S. E.	Do.
6	S. W.	$\frac{2}{3}$	19	29-9.9	20	$91\frac{1}{2}$	S. E. by S.	Cloudy.
7	S. W.	$\frac{2}{3}$	19	30-0.1	20	99	S. E. by S.	Blue sky, sprinkled with clouds.
8	S. W.	$\frac{2}{3}$	$19\frac{1}{4}$	30-0.3	20	98	S. E. by S.	Do.
9	S. W. by S.	$\frac{2}{3}$	20	30-0.7	21	96	S. E. by S.	Fine.
10	S. W. by S.	$\frac{2}{3}$	20	30-0.8	21	95	S. E.	Do.
	S. W. by S.	$\frac{2}{3}$	20	30-1.1	$21\frac{1}{2}$	94	S. E.	Do.

DATE.	Direction of the Vessel.	Rate of Sailing, out of doors.		Barometer.		Therm. of the Barom.	Hair Hygrom.	Direction of the Wind.	Weather.
		Leagues.	Degrees.	Inch.	Lines.	Degrees.	Degrees.		
11 — noon	S. W. by S.	$\frac{1}{2}$	21	30	—1	$21\frac{1}{2}$	94 $\frac{1}{2}$	S. E.	Fine.
1 —	S. W. by S.	$\frac{1}{2}$	21	30	—0.7	$21\frac{1}{2}$	94 $\frac{1}{2}$	S. E.	Do.
2 —	S. W.	$\frac{1}{2}$	20	30	—0.5	$21\frac{1}{2}$	95 $\frac{1}{2}$	S. E. by S.	Do.
3 —	S. W.	$\frac{1}{2}$	19	30	—	$20\frac{1}{2}$	95	S. E. by S.	Do. clouds in the horiz.
4 —	S. W.	$\frac{1}{2}$	19	29	—9.8	$20\frac{1}{2}$	96	S. E. by S.	Do.
5 —	S. W.	$\frac{1}{2}$	19	29	—9.7	$20\frac{1}{2}$	95 $\frac{1}{2}$	S. E. by S.	Cloudy.
6 —	S. W.	$\frac{1}{2}$	19	29	—9.9	$20\frac{1}{2}$	95	S. S. E.	Fine, clouds in horizon.
7 —	S. W.	$\frac{1}{2}$	19	30	—0.1	$20\frac{1}{2}$	95	S. S. E.	Do.
8 —	S. W.	$\frac{1}{2}$	18 $\frac{1}{2}$	30	—0.3	20	95	S. S. E.	Do.
9 —	S. W. by S.	$\frac{1}{2}$	18 $\frac{1}{2}$	30	—0.5	$19\frac{1}{2}$	96	S. E. by S.	Do.
10 —	S. W. by S.	$\frac{1}{2}$	18 $\frac{1}{2}$	30	—0.6	$19\frac{1}{2}$	96	S. E. by S.	Some clouds.
11 —	S. W. by S.	$\frac{1}{2}$	18 $\frac{1}{2}$	30	—0.7	$19\frac{1}{2}$	97 $\frac{1}{2}$	S. E. by S.	Do.
midnight	S. W. by S.	$\frac{1}{2}$	18 $\frac{1}{2}$	30	—0.7	$19\frac{1}{2}$	97 $\frac{1}{2}$	S. E. by S.	Black clouds.
Oct. 1—1 morn.	S. W. by S.	$\frac{1}{2}$	19	30	—0.6	$19\frac{1}{2}$	95 $\frac{1}{2}$	S. E. by S.	Fine, some clouds.
2 —	S. S. W.	$\frac{1}{2}$	19	30	—0.3	$19\frac{1}{2}$	96	S. E.	Do.
3 —	S. S. W.	$\frac{1}{2}$	19	29	—0.9	$19\frac{1}{2}$	95 $\frac{1}{2}$	S. E.	Do.
4 —	S. S. W.	$\frac{1}{2}$	19	29	—0.9	$19\frac{1}{2}$	95 $\frac{1}{2}$	S. E.	Do.
5 —	S. S. W.	$\frac{1}{2}$	19	29	—0.9	$19\frac{1}{2}$	95	S. E.	Fine.
6 —	S. S. W.	$\frac{1}{2}$	19	29	—0.9	$19\frac{1}{2}$	95	S. E.	Do.
	S. S. W.	1	19	30	—0.3	$19\frac{1}{2}$	95	S. E.	Do. latitude 1° 34' S.

While these observations were making the moon was in its last quarter, and the sun almost in the equator. I intend to repeat them the first time that we cross the line again, and on shore with a still more sensible barometer. — Off St. Catherine, Nov. 5, 1785.

DESCRIPTIVE NOTE

ON THE LIANES OF CHILI *;

By Ventenat, Member of the National Institute.

THE name liane is used as a general term in the East and West Indies to signify climbing plants. That species, the drawing of which was sent by La Martinière, is an under shrub with a cylindrical stem, branched, furnished with tendrils, climbing. The leaves are alternate, on foot stalks inflated at their base. Each leaf is bi-ternate, that is to say, it is divided into three leaflets, each of which is again subdivided into three oval sharp-pointed folioles, which, when young, are entire, but afterwards become obscurely lobed. The flowers, disposed in simple and pendent clusters, grow towards the top of the stem and of the branches, in the axillæ of the leaves. The plant is dicecious. At the base of each cluster of blossoms are two small, opposite, rounded, oval, floral leaves.

* The drawings of these lianes came to hand unaccompanied with any memoir or description, for the supply of which deficiency I am indebted to the enlightened botanist who has so politely furnished this note. (*Fr. Ed.*)

Male Flower.—See Plate.

Calyx formed of six expanding leaves, oblong-oval, and obtuse, of which the three outermost are the largest.

Corolla composed of six sharp lanceolated petals, opposite to, and shorter than, the leaves of the calyx.

A cylinder rises from the centre of the flower of the length of the petals, terminated by six oblong bilocular anthers, which open from below.

Female Flower.—See Plate.

Calyx, similar to that of the male flower, but larger.

Corolla inserted beneath the pistil, composed of six petals, rarely entire, but generally bifid, or trifid, at their summit: shorter than the leaves of the calyx.

Stamina six, having the same insertion as the corolla; filaments distinct, broad, very short, surrounding the pistil; *anthers*, six, upright, oblong, acuminate, barren.

Seed Bud—cells, from three to six, oblong, gibbous on the outside, of nearly the length of the corolla; styles, none; stigmata, sitting, oblong, permanent.

Berries, equal in number to the cells, oblong, acuminate (divided into six cells, containing several angular seeds. *Flora Peruviana*).

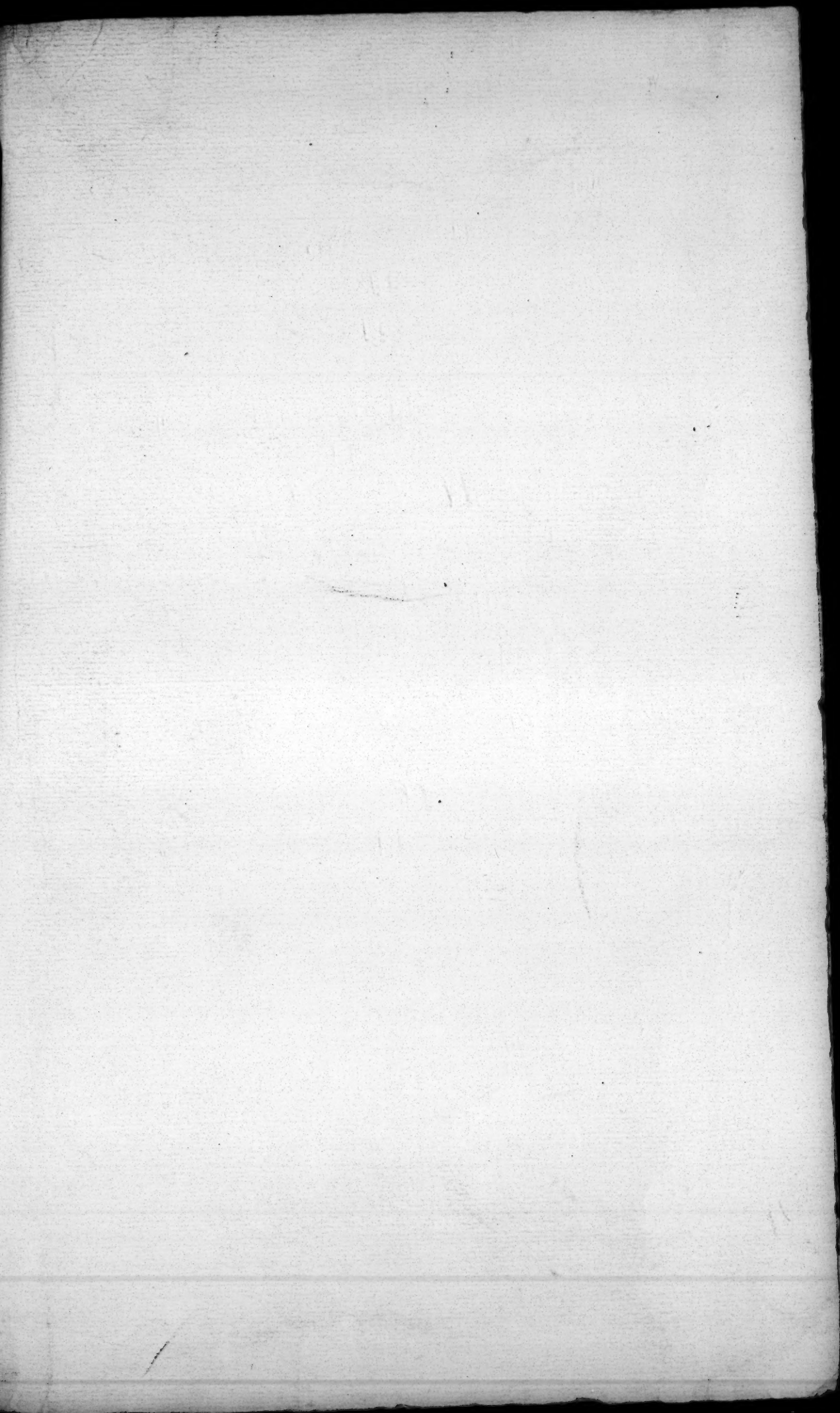
This plant forms a new genus belonging to the *diccia hexandria* of Linnæus. We could have wished to have given it the name of *La Martinière*, but, on looking over the *Flora Peruviana*, printed at Madrid in 1794, we find it there mentioned by the name of *lardizabala*. It probably exists in the herbal of our fellow-citizen Dombey, who was sent in 1774 to Peru, together with the authors of the *Flora Peruviana*, Ruiz and Pavon, to contribute to the advancement of natural history.

The general character of the *lardizabala* evidently places this new genus among the family of the *menispermæ*, to which it is related by its climbing stalk, its bunches of *diccious* flowers, by its six petals, *stamina*, and leaves of its calyx, by its pistil composed of from three to six cells, which contain as many seeds. It differs from the known genera of this order only in its fruit, which, instead of being *monospermous*, contains several seeds. This character, which requires the introduction of a new section into the *menispermæ*, strengthens the relation of this family to the next order of the *anonæ*. In fact, the greater part of the genera of the *anonæ*, as they have in the same flower several fruits, with numerous seeds, differ in this particular from all the genera of the *menispermæ*, and by placing between
them

them the lardizabala, we establish a natural transition. In order to confirm these resemblances, it only remains to examine the inside of the fruit, and particularly the structure of the seeds. Those of the menispermæ are reniform, at least on the inside, enclosed in a hinged pericarpium, and containing in their upper part a very small dicotyledonous embryo. The characters that we have given of the lardizabala render probable a similar structure in its seeds. The authors of the *Flora Peruviana* do not mention it, because, being probably not sufficiently acquainted with the principles of the arrangement of nature, which is true science, they have not attached to the characters, furnished by the seeds, all the importance that they merit. They are, nevertheless, looked upon by true naturalists as the touchstone and verification of all others.

4 AP 54

TABLES,



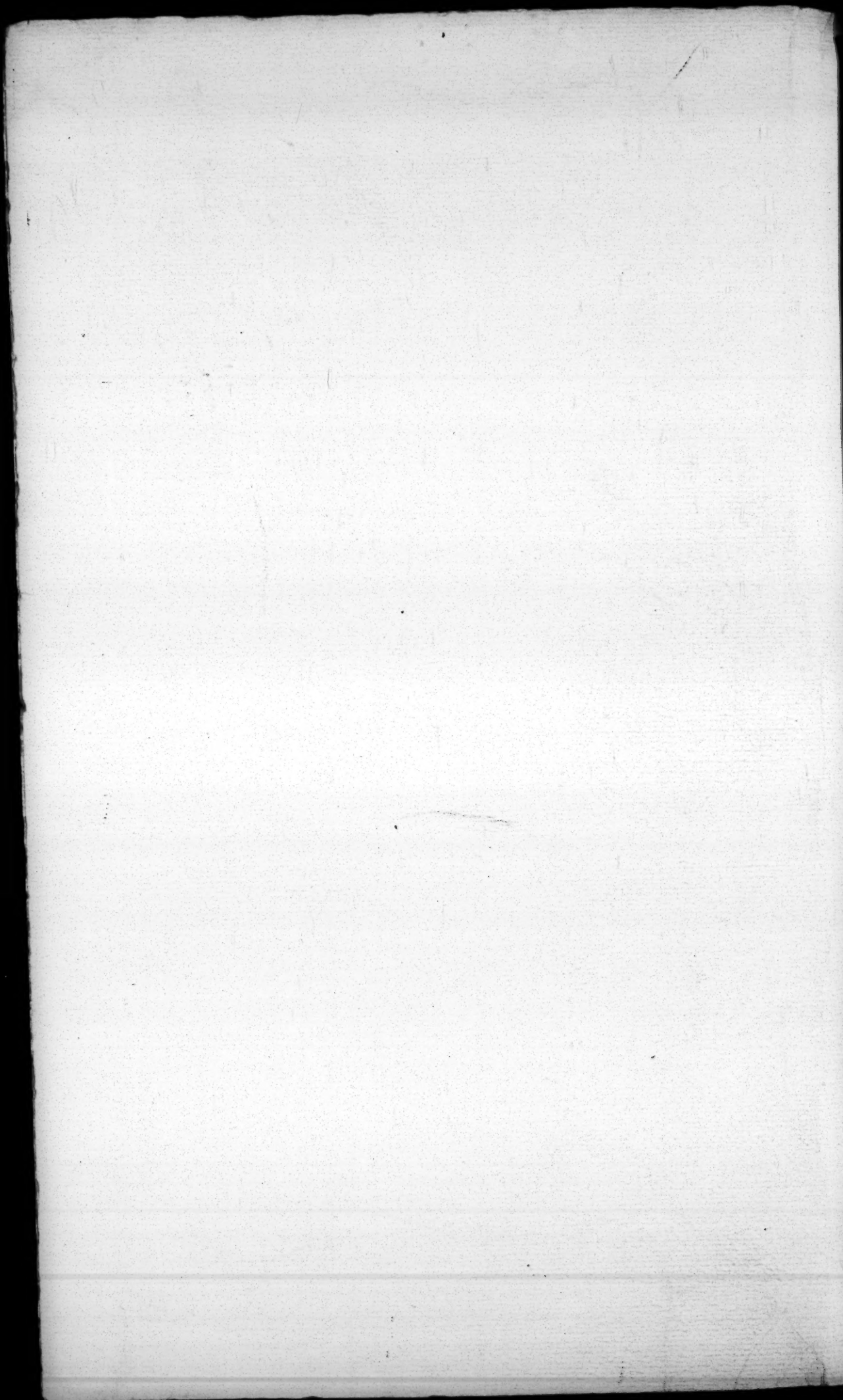
Male Plant.



Female Plant.



Liane of Chili called by the Natives Guilboqui.

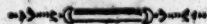


TABLES,
SHEWING THE
COURSE of L'BOUSSOLE,
DURING THE YEARS
1785, 1786, 1787, and 1788,
FROM THE TIME OF THE SHIP'S SAILING FROM EUROPE
TILL ITS ARRIVAL IN BOTANY BAY.

In these tables an account is given of the ship's position at noon; the declination of the needle as observed on the morning or evening of the same day; the degree in Reaumur's thermometer, and the height of the barometer at sun-rise; and lastly, the inclination of the needle at the times when it was possible to observe it.

ABBREVIATIONS.

br. for breeze; fr. fresh; g. gale; l. light; w. weather; cl. cloudy; st. stormy; I.N. Inclination of the Needle.



N. B. By *mist* is not meant *fog*, although the terms are often confounded, but *dark, heavy weather, rather inclining to be foggy and wet.*



LA PEROUSE'S VOYAGE ROUND THE WORLD.

3

Aug. & Sept. 1785.	Lat. Nor.		Longitude computed Wch.		Long. W. by the Time Piece, No. 19.	Lon. W. by the Dif. of the M. from the Sun.	Declination of the Needle W.		Ther.	Barom.	Wind, State of the Sky; Remarks.
	D.	M.	D.	M.	Point of Dep.	D.	M.	D.	P. L.		
A. 1	48	11	7	33	—	—	—	11 $\frac{1}{2}$	28 02	E. th. w. rain.	
2	47	09	9	03	—	—	—	14	27 11	S. S. E. fr. S. misty.	
3	46	56	10	23	—	—	—	12 $\frac{3}{4}$	27 07	S. squalls, overcast, rain.	
4	45	33	11	23	D. M.	—	21 14	14	27 10	N. E. l. br. fair weather.	
5	44	15	11	53	11 04	—	21 0	14 $\frac{1}{2}$	28 04	N. W. l. br. fair.	
6	43	23	12	37	11 42	—	22 40	15	28 04	N. N. E. l. br. cl.	
7	41	19	14	01	—	—	—	15	28 04	N. E. fr. br. cl.	
8	38	59	15	43	14 45	—	22 40	15	28 02	Do.	
9	36	52	16	16	15 19	—	18 55	15 $\frac{1}{2}$	28 04	N. E. fr. g. fair.	
10	34	40	16	42	—	—	—	16 $\frac{3}{4}$	28 03	N. E. l. br. fair.	
11	33	02	17	13	16 21	—	19 0	17	28 02	N. N. E. l. br. fair.	
12	32	57	18	37	17 45	—	—	17	28 02	{ N. N. E. l. br. misty. At 8 o'clock, P. M. saw the Defart Islands.	
13	32	59	19	23	—	—	—	18	28 04	{ E. S. E. l. b. fr. At 8 o'clock, P. M. anchored in the road of Funchal, isl. of Madeira.	
14	AMadeira		—	—	—	—	—	—	—	S. E. little or no wind, cl.	
15	Do.		—	—	—	—	—	—	—	S. E. little wind, fr.	
16	32	31	19	15	—	—	16 0	—	—	{ E. l. br. fr. At 9 o'clock A. M. failed from Madeira.	
17	31	28	19	08	—	—	16 0	—	—	E. l. br. fr.	
18	30	18	18	22	18 10	—	—	—	—	{ N. E. brisk g. saw the Salvaged Islands.	
19	28	32	18	52	—	—	16 0	18	28 05	{ N. E. brisk g. at 4 o'clock, A. M. saw the Canary Islands, 2 leag. to the S. S. W. At 1, P. M. anch. in the road of Santa Cruz, isl. of Teneriffe.	
20	ATeneriff		—	—	—	—	—	—	—	N. N. E. l. br. fr.	
21	Do.		—	—	—	—	—	—	—	Do.	
22	Do.		—	—	—	—	—	—	—	Do.	
23	Do.		—	—	—	—	—	—	—	Do.	
24	Do.		—	—	—	—	—	—	—	N. E. fr. g. fair	
25	Do.		—	—	—	—	—	—	—	N. N. E. l. br. fair.	
26	Do.		—	—	—	—	—	—	—	Do.	
27	Do.		—	—	—	—	—	—	—	Do.	
28	Do.		—	—	—	—	15 52	—	—	E. N. E. l. br. fair.	
29	Do.		—	—	—	—	—	—	—	N. N. E. l. br. fair.	
30	28	21	18	31	—	—	15 52	—	—	{ N. N. E. fr. g. fair. Sailed from Santa Cruz.	
31	27	18	18	43	—	—	15 38	19	28 03	N. N. E. l. br. fair.	
1	25	37	19	09	—	—	15 10	18	28 03	N. E. fr. g. fair.	
2	23	56	19	09	—	—	15 05	18 $\frac{3}{4}$	28 03	N. N. E. l. br. misty.	
3	22	13	20	31	—	—	—	19	28 03	N. E. l. br. fair.	
4	21	18	20	58	—	—	—	19	28 04	N. l. br. fair.	
5	19	26	21	36	22 19	—	—	20	28 03	N. E. l. br. fair.	
6	17	34	21	57	—	—	12 07	20	28 02	N. E. fr. g. fair.	
7	16	16	22	01	22 34	—	—	20 $\frac{1}{4}$	28 02	Ditto.	
8	15	17	22	04	—	—	8 11	22	28 02	E. a calm, ft.	
9	14	58	22	10	—	—	—	22	28 02	S. S. E. a calm, ft.	
10	14	12	22	11	—	—	8 49	22 $\frac{1}{2}$	28 02	E. very little wind, fair.	
11	13	57	22	21	—	—	—	21	28 02	S. S. E. a calm, ft.	
12	13	07	22	32	—	—	—	20 $\frac{3}{4}$	28 02	S. S. E. l. br. ft.	
13	12	09	22	38	22 10	—	7 45	19	28 03	N. N. E. l. br. ft.	
14	11	02	22	42	21 58	—	10 23	21 $\frac{1}{2}$	28 02	N. l. br. fair. Inc. N. 20°.	
15	10	22	22	43	—	—	10 16	21	28 02	N. N. W. l. br. fair.	
16	9	10	22	10	—	—	—	21	28 02	S. W. l. br. misty.	
17	8	30	21	33	19 47	—	—	20 $\frac{1}{2}$	28 02	S. W. fr. g. cl.	
18	7	37	20	56	18 56	—	12 04	20 $\frac{1}{4}$	28 02	S. W. l. br. cl.	
19	7	03	20	51	18 53	—	12 12	21	28 03	W. N. W. little wind, fair.	
20	6	07	20	48	—	—	—	19	28 02	N. W. l. br. misty	

LA PEROUSE'S VOYAGE

Sept. Oct. Nov. 1785.	Lat. Nor.		Long. computed West.		Long. W. by the Time Piece, No. 19.		Long. W. by the Diff. of the Mn. from the Sun.		Declination of the Needle W.		Ther.		Barom.		Winds; State of the Sky; Remarks.	
	D.	M.	D.	M.	D.	M.	D.	M.	D.	M.	D.	P.	L.			
21	5	21	20	31	—	—	11	15	20	28	02					{ S. S. W. l. br. rain. Saw some birds.
22	4	42	19	44	—	—	—	—	20	28	03					{ S. S. W. fr. g. rain.
23	3	41	19	21	16	10	16	22	12	30	20	28	03			{ S. W. gusts of winds, thick w.
24	2	54	18	47	—	—	—	—	13	47	20	28	03			{ S. W. l. br. fair.
25	2	22	18	20	14	28	—	—	—	—	20	28	03			{ S. S. E. l. br. rain.
26	1	39	18	46	15	37	15	46	13	26	20	28	03			{ S. l. br. cl.
27	1	17	19	24	—	—	—	—	13	36	20	28	03			{ Ditto.
28	0	50	20	12	17	31	—	—	—	19	28	02				{ S. S. E. fr. g. gusts of wind, rain. I. N. 13°.
29	0	11	21	02	18	33	—	—	—	19	28	02				{ S. S. E. fr. g. rain. I. N. 17°.
30	0	42	21	47	19	12	—	—	—	19	28	03				{ S. E. fr. g. cl. I. N. 17°.
O. 1	1	43	22	10	19	41	—	—	9	50	19	28	03			{ S. E. l. br. fair. I. N. 16°.
2	3	00	22	38	20	22	—	—	9	59	19	28	03			{ S. E. fr. g. fair.
3	4	17	23	03	21	03	—	—	9	19	19	28	03			{ S. E. ½ E. fr. g. fair.
4	5	37	23	32	21	42	—	—	8	18	19	28	03			{ S. S. E. fr. g. fair. I. N. 10°.
5	6	50	24	00	22	12	—	—	8	43	19	28	03			{ S. E. fr. g. fair. I. N. 8°.
6	8	05	24	26	23	01	—	—	8	44	19	28	03			{ S. E. gusts of w. misty. I. N. 8°.
7	9	26	24	54	23	39	—	—	8	44	19	28	03			{ E. S. E. fr. g. misty. I. N. 7°.
8	10	57	25	25	—	—	—	—	5	50	19	28	04			{ E. S. E. gusts of w. cl. I. N. 3°.
9	12	14	25	56	—	—	—	—	5	30	18	28	04			{ E. S. E. fr. g. cl.
10	13	23	26	18	25	23	—	—	5	14	18	28	03			{ S. E. ½ E. fr. g. foggy.
11	14	29	26	40	25	47	25	24	4	07	18	28	03			{ S. E. l. br. misty. I. N. 2°.
12	15	46	27	02	26	30	26	12	3	34	18	28	04			{ Ditto. I. N. 4°.
13	17	03	27	24	27	14	—	—	5	14	17	28	04			{ E. S. E. fr. g. overcast. I. N. 5°.
14	18	39	28	04	28	09	—	—	3	01	17	28	04			{ E. N. E. fr. g. fair. I. N. 8°.
15	20	23	28	51	28	52	—	—	1	46	17	28	03			{ N. E. fr. g. fair. I. N. 12°.
16	20	38	30	33	30	37	—	—	1	01	17	28	03			{ N. l. br. Saw the isles of Martin Vas, about 10 leag. W. 34° N. I. N. 14°.
									East.							{ N. N. W. l. br. fair. At 6 o'clock A. M. saw Trinity Island, about 8 leagues W. 17° N.
17	20	39	31	24	—	—	—	—	0	57	—	—	—			
18	20	39	31	24	31	19	—	—	1	00	14	28	02			{ N. N. W. l. br. misty. I. N. 15°.
19	21	01	33	15	—	—	—	—	—	—	18	28	02			{ S. S. E. fr. g. fair. I. N. 14°.
20	20	33	34	34	—	—	—	—	—	—	17	28	02			{ S. E. fr. g. overcast.
21	20	34	35	21	—	—	—	—	1	42	17	28	02			{ S. E. l. br. rain. I. N. 17°.
22	20	28	36	33	—	—	—	—	1	54	17	28	03			{ S. S. E. fr. g. fair.
23	20	29	37	53	37	33	—	—	—	—	16	28	04			{ S. E. l. br. fair. I. N. 13°.
24	21	27	38	38	—	—	—	—	3	32	16	28	03			{ E. N. E. l. br. fair. I. N. 14°.
25	23	26	40	03	39	57	—	—	4	00	16	28	00			{ N. E. fr. g. rain. I. N. 17°.
26	24	11	41	14	40	56	41	06	4	40	16	28	01			{ W. N. W. heavy gales, rain and thunder.
27	25	03	42	01	41	26	41	45	4	55	17	28	00			{ W. N. W. fr. g. cl. I. N. 20°.
28	24	45	42	22	41	54	—	—	4	55	17	28	02			{ W. N. W. fr. g. cl. I. N. 20°.
29	24	49	43	19	—	—	—	—	—	—	16	28	02			{ W. S. W. l. br. fair. I. N. 20°.
30	25	32	44	55	—	—	—	—	6	30	16	28	01			{ E. N. E. l. br. fair. Saw some Albatrosses.
31	25	57	45	43	—	—	—	—	—	—	17	28	00			{ S. E. l. br. rain.
N. 1	26	48	47	01	46	41	—	—	9	05	16	28	02			{ S. E. fr. g. foggy.
2	27	33	48	05	—	—	—	—	9	50	15	28	01			{ N. N. E. l. br. fair.
3	27	30	49	13	—	—	—	—	—	—	15	28	01			{ S. S. E. l. br. stormy, rain
																{ S. S. E. l. br. misty. At 3 o'clock P. M. saw the continent of Brasil, about 10 leagues distant W. 15° S.
4	27	11	49	14	—	—	—	—	11	30	14	27	09			{ S. l. br. fair. Sounded in 37 and 40 fathoms, bottom sand and mud. I. N. 29°.
5	26	51	49	35	49	49	—	—	12	12	14	28	02			

ROUND THE WORLD.

5

Nov. & Dec. 1785	Lat. S.	Long. computed West.	Long. W. by the Time Piece, No. 19.	Long. W. by the Dif. of the Mn. from the Sun.	Declina- tion of the Needle E.	Ther.	Barom.	Winds, State of the Sky; Remarks.
	D. M.	D. M.	D. M.	D. M.	D. M.	D.	P L.	
N. 6	27 20	49 42	—	—	12 12	—	—	N. N. E. fr. g. fair. At 4 o'clock P. M. anchored at St. Catharine's in 7 fathom, bottom sand and mud.
7	A St. Cat.	—	—	—	—	15 1/2	28 01	S. fr. g. fair.
8	—	—	—	—	—	—	—	S. varying to the N. E. fr. g. fair.
9	—	—	—	—	—	—	—	N. N. E. l. br. fair. Changed our anchorage.
10	—	—	—	—	—	—	—	N. N. E. fr. g. fair.
11	—	—	—	—	—	—	—	N. N. E. varying to the E. S. E. fr. g. ft. rain.
12	—	—	—	—	—	—	—	E. S. E. varying to the S. fr. g. foggy.
13	—	—	—	—	—	—	—	S. l. br. misty.
14	—	—	—	—	—	—	—	N. varying to the N. E. very little wind, fair.
15	—	—	—	—	—	—	—	S. ft. thunder.
16	—	—	—	—	—	—	—	N. N. E. l. br. fair.
17	—	—	—	—	—	—	—	N. ft. thunder and lightning.
18	—	—	—	—	—	—	—	N. almost a calm, ft.
19	27 21	50 0	—	—	12 0	—	—	S. S. W. very little wind, fair. Set sail at 5 o'clock A. M. at 10 o'clock a calm, anchored 2 leagues N. of the first anchoring place; failed at 2 P. M. <i>I. N.</i> 30°.
20	27 27	49 15	—	—	11 0	17 1/2	28 2	S. W. fr. g. cl.
21	27 59	48 33	—	48 53	10 0	15 1/2	28 2	S. W. fr. g. fair.
22	28 52	48 02	—	—	11 16	16 1/2	28 1	N. E. a calm, fair.
23	30 50	46 50	—	47 40	9 0	15 1/2	28 0	N. E. fr. g. fair.
24	31 34	46 20	—	46 43	7 31	16 1/2	28 2	S. E. l. br. misty. <i>In. N.</i> 33°.
25	32 35	45 38	45 38	—	7 20	17	28 2	N. E. l. br. misty.
26	33 36	44 32	—	—	7 20	15	28 1	N. E. varying to the E. S. E. very little wind, fair.
27	35 03	43 19	—	—	8 7	14	28 0	E. l. br. rain.
28	35 24	43 39	44 10	—	7 10	13	27 11	S. gusts of Wind, cl.
29	35 44	42 53	42 59	—	8 21	13 1/2	28 2	W. l. br. <i>In. N.</i> 41°.
30	36 27	41 58	41 41	—	8 53	14	28 3	N. N. W. very little wind, fr.
D. 1	37 38	40 21	39 29	—	—	14	28 3	W. N. W. fr. g. fr. <i>In. N.</i> 43°.
2	38 36	39 30	—	—	—	13 1/2	28 3	S. S. W. fresh g. rain.
3	40 01	37 58	—	—	—	11 1/2	27 11	Do. <i>In. n.</i> 43°.
4	40 49	37 02	—	—	7 32	10	28 0	S. W. fresh g. fr.
5	42 31	36 51	—	—	7 34	10 1/2	28 2	W. N. W. fresh g. fr.
6	43 48	36 27	—	—	8 32	8 1/2	27 10	S. W. fresh g. overcast
7	44 34	35 38	33 09	34 10	6 59	6 1/2	27 11	Do. <i>In. N.</i> 50°.
8	45 03	35 28	—	—	—	7 1/2	27 11	N. W. little wind, fr.
9	44 13	35 45	34 44	35 50	—	9	27 10	W. N. W. gusts of wind, rain.
10	44 44	36 39	—	—	8 27	9	27 9	N. fresh g. fr.
11	44 51	37 12	34 09	—	—	5	27 5	S. W. squally weather, rain.
12	44 38	38 02	—	—	—	7	28 0	N. N. W. fresh g. rain.
13	45 19	38 52	—	—	8 33	7	27 10	S. W. 1/2 W. gusts of wind, rain.
14	44 0	39 10	—	—	9 20	7	28 1	N. W. l. br. fair. <i>In. N.</i> 51°.
15	43 27	40 16	36 26	—	8 32	8	28 4	W. S. W. fresh g. fr.
16	44 13	41 34	—	—	—	9 1/2	27 10	N. N. E. very little wind, cl.
17	44 42	41 49	38 06	—	10 47	7	28 2	W. l. br. fr.
18	44 53	42 55	39 25	—	11 52	7 1/2	27 0	W. N. W. l. br. foggy.
19	44 35	44 32	—	—	11 56	10	28 1	Do.
20	44 47	45 35	42 25	—	12 16	9	28 0	W. N. W. l. br. foggy.
21	44 50	46 20	—	—	—	9	28 0	W. N. W. l. br. misty.
22	44 44	46 50	44 08	44 41	12 53	9 1/2	28 0	N. W. l. br. misty.
23	43 26	46 58	—	—	12 39	10	27 10	W. S. W. l. br. fr.

Dec. Jan. & Feb. 1785.	Latitude South.		Long. computed West.		Long. W. by the Time Piece, No. 19.		Long. W. by the Dif. of the M. from the Sun.		Declina- tion of the Needle E.		Ther.	Barom.	Winds; State of the Sky; Remarks.	
	D.	M.	D.	M.	D.	M.	D.	M.	D.	M.	D.	P. L.		
D. 24	43	26	47	37	—	—	—	—	12	58	10	28	0	W. S. W. l. br. fr.
25	42	23	48	10	—	—	—	—	—	—	10	27	7	S. W. l. br. rain.
26	42	23	48	37	—	—	—	—	—	—	9	28	0	S. S. W. squally w. fr.
27	42	42	49	17	47	50	—	—	13	50	9	28	0	S. S. E. a calm, rain.
28	42	2	49	59	47	59	—	—	—	—	10	27	11	S. E. almost a calm, fair.
29	41	45	51	6	48	57	—	—	14	47	10	27	11	N. W. very little w. fr.
30	42	9	51	58	49	20	—	—	14	17	10	28	0	S. S. W. gusts of wind, rain.
31	42	19	53	7	—	—	—	—	—	—	10	28	1	W. N. W. fresh g. cl. In. N. 50°.
1786														
J. 1	41	38	53	27	51	5	—	—	15	29	12	28	0	S. W. l. breeze, fr.
2	41	29	54	19	52	11	—	—	—	—	14	28	2	N. N. W. fresh g. fr. In. N. 51°.
3	42	35	55	50	53	20	—	—	16	45	14	27	11	W. fresh g. fr. In. N. 52°.
4	42	45	56	50	54	42	55	47	16	11	10	28	0	N. N. E. l. breeze, fr.
5	43	38	58	11	55	44	57	4	17	44	12	27	9	N. N. W. fresh br. cl.
6	44	44	59	0	—	—	—	—	17	9	12	27	9	W. S. W. a calm, fair.
7	44	55	59	51	57	23	—	—	17	21	10	37	11	N. W. gusts of wind, cl.
8	45	31	60	48	58	17	59	17	18	18	10	27	6	S. W. fresh g. fr. In. N. 55°.
9	46	48	61	48	59	47	—	—	18	45	9	27	6	W. 1/4 N. W. l. br. fr.
10	47	47	62	17	—	—	—	—	—	—	8	27	5	{ S. W. 1/4 W. fresh g. misty. In. N. 57°.
11	48	12	62	44	60	26	—	—	21	26	10	27	11	S. W. fresh g. fr.
12	47	58	63	22	61	15	—	—	20	19	8	27	8	{ S. S. W. very little wind, fr. In. N. 59°.
13	46	50	64	20	—	—	—	—	22	24	8	28	2	S. S. W. squally w. fr.
14	47	60	65	44	—	—	—	—	22	0	10	27	8	S. W. l. breeze, fr.
15	48	55	66	59	—	—	—	—	21	46	10	27	5	W. N. W. fresh g. fr. In. N. 59°.
16	49	40	67	7	64	43	—	—	20	16	9	27	11	N. W. l. br. fr.
17	50	5	68	1	—	—	—	—	21	25	7	28	1	S. S. E. fresh g. fr. In. N. 52°.
18	48	56	68	41	66	43	—	—	21	20	9	28	4	S. l. br. fr.
19	50	15	69	27	67	39	—	—	21	54	9	28	5	N. E. l. br. fr.
20	50	57	70	45	68	48	69	46	21	22	8	28	2	{ N. W. very little wind, fr. In. N. 51°.
21	51	35	71	8	—	—	—	—	22	47	9	28	0	{ S. S. E. l. br. fr. At 4 o'clock, A. M. saw the coast of Pa- tagonia.
22	52	21	70	58	68	55	69	38	22	49	10	28	2	{ N. l. br. fr. Cape Fair Wea- ther, about 5 leagues dis- tant, W. 26° S. In. N. 62°.
23	53	40	70	17	68	6	68	6	20	10	8	28	2	{ W. l. br. fr. The land nearest in sight, bore S. 5° W. at about 5 leagues distance.
24	54	35	69	3	66	41	68	4	21	0	10	28	1	{ N. W. l. br. fr. Cape St. Vin- cent bore E. 11° S. at about 4 leagues distance. Left the Sts of Le Maire. In. N. 63°.
	54	57	67	57	P. of Dep.	—	—	—	—	—	—	—	—	
25	55	48	68	0	—	—	—	—	21	0	9	27	8	S. W. fresh g. fr. In. N. 63°.
26	57	13	68	25	66	36	—	—	—	—	6	27	7	W. gusts of wind, cl.
27	57	59	69	17	—	—	—	—	20	30	4	27	3	{ W. S. W. fr. g. foggy, heavy sea. In. N. 65°.
28	57	58	70	58	68	18	—	—	—	—	4	27	4	S. S. E. Squally w. cl.
29	58	22	72	7	—	—	—	—	—	—	4	27	4	W. fresh g. rain. In. N. 67°.
30	57	54	72	27	—	—	—	—	22	30	5	27	4	W. S. W. fr. g. cl.
31	58	23	72	43	—	—	—	—	—	—	6	27	6	{ W. 1/4 N. W. very little wind, a fog. In. N. 66°.
F. 1	58	3	73	26	71	25	—	—	23	28	6	27	7	W. l. br. cl. In. n. 66°.
2	58	24	74	37	—	—	—	—	25	39	6	27	4	N. fresh g. driz. In. N. 68°.
3	58	51	76	17	—	—	—	—	25	0	6	27	4	N. fr. g. cl.
4	58	50	76	42	—	—	—	—	24	30	4	27	1	W. gusts of wind, rain.
5	59	48	77	23	—	—	—	—	—	—	4	27	5	W. N. W. fresh g. r. In. N. 70°.
6	60	38	78	32	77	21	—	—	—	—	4	26	11	W. l. breeze, overcast.
7	59	20	80	26	78	41	—	—	—	—	3	27	4	S. W. fresh g. inow. In. N. 72°.
8	58	38	81	42	79	52	—	—	—	—	3	27	1	S. E. Squally weather, cl.

ROUND THE WORLD.

7

Feb. Mar. 1786.	Lat. South.	Long. W. by the Time- Piece, No. 19.	Long. W. by the Diff. of the M. from the Sun.	Declina- tion of the Needle E.	Ther.	Barom.	Winds; State of the Sky; Remarks.
	D. M.	D. M.	D. M.	D. M.	D. M.	D. P. L.	
F. 9	57 21	84 36	82 38	—	—	5 27 04	S.S.W. squally w. cl. <i>I. N.</i> 71°.
10	56 01	86 23	—	—	20 50	4 1 27 05	S. W. fr. g. fair.
11	53 39	87 2	84 10	—	—	5 1 27 09	Ditto.
12	53 05	87 55	84 14	—	22 29	4 1 27 09	S. W. fr. g. cl. <i>I. N.</i> 63°.
13	51 17	88 01	—	—	20 08	5 1 27 06	S.W. squally w. rain. <i>I. N.</i> 67°.
14	49 58	87 58	—	—	—	5 1 27 10	W. fr. g. rain.
15	48 03	87 38	—	—	—	7 27 08	Ditto. <i>I. N.</i> 64°.
16	45 17	87 18	82 22	—	17 30	7 27 09	S. S. W. fr. g. fair. <i>I. N.</i> 63°.
17	43 25	86 27	81 24	—	—	9 1 28 01	W. fr. g. foggy. <i>I. N.</i> 60°.
18	42 13	85 55	80 36	—	14 27	10 1 28 01	W. l. br. fair. <i>I. N.</i> 58°.
19	41 04	84 55	79 20	80 25	14 10	12 28 01	S. W. fr. g. fair. <i>I. N.</i> 55°.
20	39 54	83 31	77 42	78 32	14 23	13 1 28 02	W.S.W. l. br. fair. <i>I. N.</i> 55°.
21	39 8	81 56	76 17	77 18	14 29	13 28 03	{ S.S.W. l. br. fair. Saw land a head.
22	37 51	80 50	75 13	76 10	15 44	13 28 03	{ S. fr. g. fair. At 8 A. M. the coast of Chili, which we saw on the 21st. bore E. N. E. distant about 6 leagues. <i>I. N.</i> 52°.
23	36 42	80 15	75 00	75 53	15 30	12 1 28 01	{ S. fr. g. fair. The paps of of Biobio bore E. 20° S. At 6 o'clock P.M. founded in 16, 15, and 14 fathom. At 8 P.M. anchored in the bay of Talcahuana, in 11 fathom; bottom clay, or sand and mud. <i>I. N.</i> 50°.
24	36 43	—	75 30	—	—	9 1 28 01	{ S. S. W. very little wind. Anchored further in the bay, in 6 1/2 fathom, bottom sand and mud.
25	Ditto	—	Ditto	—	—	—	{ W. varying to the W. S. W. l. br. fair.
26	Ditto	—	—	—	—	—	S. W. l. br. fair. <i>I. N.</i> 51°.
27	Ditto	—	—	—	—	—	S. S. W. l. br. fair.
28	Ditto	—	—	—	—	—	Ditto.
M. 1	Ditto	—	—	—	—	—	Ditto.
2	Ditto	—	—	—	—	—	S. W. l. br. fair.
3	Ditto	—	—	—	—	—	Ditto.
4	Ditto	—	—	—	—	—	Ditto.
5	Ditto	—	—	—	—	—	Ditto.
6	Ditto	—	—	—	—	—	Ditto.
7	Ditto	—	—	—	—	—	S. S. W. l. br. fair.
8	Ditto	—	—	—	—	—	Ditto.
9	Ditto	—	—	—	—	—	S. W. l. br. fair.
10	Ditto	—	—	—	—	—	Ditto.
11	36 43	—	75 30	—	15 15	—	S. S. W. l. br. fair.
					Observed at the ob- servatory with the compass Nos. 1, 2, 3.		
12	Ditto	—	—	—	—	—	S. W. l. br. fair.
13	Ditto	—	—	—	—	—	S. S. W. very little wind. fair.
14	Ditto	—	—	—	—	—	N. l. br. foggy.
15	Ditto	—	—	—	—	—	N. varying to the N. N. W. cl.
16	Ditto	—	—	—	—	—	N. fr. g. rain.
17	Ditto	—	—	—	—	—	S. S. E. very little wind, fair.
18	36 27	75 34	—	—	15 14	11 1 28 02	{ S. fr. g. Sailed from Talca- huana, coast of Chili, at one o'clock, P. M.
19	35 28	76 44	—	—	—	28 03	S. fr. g. fair.

Mar. Apr. & May. 1786.	Latitude South.	Long. computed West.	Long. W. by the Time Piece. No. 19.	Long. W. by the Dif. of the M. from the Sun.	Declina- tion of the Needle E.	Ther.	Barom.	Winds; State of the Sky; Remarks.
	D. M.	D. M.	D. M.	D. M.	D. M.	D.	P. L.	
M 2	33 44	78 57	—	—	14 11	11	28 2	S. S. W. fr. g. fair. <i>I. N.</i> 49°.
21	32 32	81 21	—	—	—	13	28 4	S. fr. g. fair. <i>I. N.</i> 48°.
22	31 28	83 34	—	—	—	13 ½	28 4	S. S. E. fr. g. fair.
23	30 3	86 1	85 52	85 39	16 50	14	28 4	E. fr. g. overcast, rain.
24	29 45	87 54	87 44	87 38	14 0	15	28 2	S. S. E. fr. g. fair.
25	29 12	89 34	89 19	89 14	10 2	14 ½	28 2	S. E. fresh g. rain. <i>In. N.</i> 46°.
26	28 31	91 15	90 52	—	9 0	15	28 4	S. E. fresh g. fair.
27	27 56	93 27	—	—	7 50	16 ½	28 5	S. S. E. fresh g. cl. <i>In. N.</i> 44°.
28	27 33	95 52	—	—	—	16	28 5	E. fresh g. cl.
29	27 16	97 51	97 49	—	6 15	17	28 4	E. fresh g. misty.
30	27 7	99 36	99 11	—	6 22	16 ½	28 3	E. S. E. l. br. rain. <i>In. N.</i> 43°.
31	27 1	101 37	101 1	—	5 5	17	28 4	S. E. l. br. fair. <i>In. N.</i> 43°.
A. 1	27 4	103 37	103 2	—	6 31	17 ½	28 4	Do. <i>In. N.</i> 43°.
2	27 9	105 55	105 17	—	5 44	18	28 4	E. fresh g. cl.
3	27 5	107 41	107 19	—	—	18	28 4	N. E. fresh g. fr.
4	27 12	109 30	108 49	—	—	19	28 3	N. l. breeze, fr.
5	27 5	109 46	—	—	—	19	28 2	N. l. br. cl.
6	27 2	109 41	109 22	—	—	19	28 0	W. N. W. heavy g. rain.
7	26 58	110 1	109 53	—	—	18	28 2	S. E. l. breeze, rain.
8	27 8	111 16	110 56	—	—	17	28 1	N. E. fresh g. cl. At 3 P. M. saw Easter Island, in the W. ½ S. W. about 12 leagues distant.
9	27 9	112 18	111 51	—	—	17 ½	28 6	S. S. E. fresh g. fr. At 1 P. M. anchored at Easter Island, in 36 fathom, bottom fine grey sand.
	Latitude of Easter Island at the Place of Anc.		Long. of Easter Island at the Place of anch.					
10	27 9	111 56	111 56	—	3 10	17 ½	28 2	S. S. E. l. br. fr. At 8 P. M. failed from Easter Island.
11	26 24	112 6	111 51	—	2 26	17	28 3	S. S. E. l. br. fr. <i>In. N.</i> 41°.
12	25 0	111 59	111 52	—	3 11	17 ½	28 3	E. S. E. l. br. fr. Saw Easter Island, distant 20 leagues. <i>In. N.</i> 41°.
13	23 22	111 57	111 47	—	3 58	17 ½	28 3	S. E. fresh g. fr. <i>In. N.</i> 38°.
14	21 47	111 51	111 54	—	3 40	17 ½	28 2	S. E. l. br. fr. <i>In. N.</i> 34°.
15	20 34	111 45	111 52	—	4 32	18 ½	28 3	E. S. E. l. b. fr. <i>In. N.</i> 33°.
16	19 4	111 50	112 14	—	4 46	19	28 3	E. N. E. l. br. fr. <i>In. N.</i> 32°.
17	17 30	112 18	112 55	—	4 20	10	28 3	N. E. fr. g. cl.
18	16 1	112 31	113 6	—	4 52	18	28 3	E. N. E. fr. g. fr.
19	14 8	112 29	113 16	—	4 50	19	28 2	E. fresh g. cl.
20	12 15	112 25	113 31	113 15	5 5	19 ½	28 2	E. S. E. fresh g. fr.
21	10 7	112 23	113 28	113 25	5 23	19 ½	28 2	E. fresh g. fr.
22	8 19	112 39	114 10	—	—	20	28 2	E. S. E. fresh g. fr.
23	6 36	112 56	114 40	114 35	—	21	28 1	S. E. fresh g. fr.
24	5 26	113 23	115 43	—	—	20 ½	28 2	S. S. E. l. br. fr.
25	4 17	114 9	116 49	—	3 35	20 ½	28 3	S. E. l. br. fr.
26	3 21	114 53	117 49	—	3 9	20 ½	28 2	E. S. E. l. br. fr.
27	2 15	115 26	118 26	—	2 21	20	28 1	E. fresh g. fr.
28	0 54	116 2	118 45	—	2 6	20	28 1	S. S. E. l. br. fr.
	Lat. N.							
29	0 18	116 33	118 0	—	2 58	19 ½	28 1	S. E. l. br. fr.
30	1 40	117 11	119 7	—	1 1	21	28 1	Do.
M. 1	2 59	118 0	119 53	—	—	21	28 1	Do.
2	4 6	118 54	120 35	—	—	21	28 1	Do.
3	5 7	119 32	121 14	—	0 44	21	28 1	Do.
4	5 49	119 46	121 2	—	1 2	21	28 1	Do.
5	6 11	119 55	—	—	1 35	21 ½	28 1	E. N. E. very little wind, fr.
6	7 6	120 50	121 46	—	—	21 ½	28 1	N. E. l. br. fr.
7	8 17	121 33	122 55	—	—	21	28 1	E. l. br. rain.

May. June. 1786.	Lat. Nor.	Long. computed W.	Long. W. by the Time- Piece, No. 19.	Long. W. by the Dif. of the M. from the Sun.	Declina- tion of the Needle East.	Ther.	Barom.	Winds; State of the Sky; Remarks.
	D. M.	D. M.	D. M.	D. M.	D. M.	D.	P. L.	
M. 8	9	25	122 11	123 54	—	3 17	21 $\frac{1}{2}$	28 1 N. E. l. br. cl.
9	10	44	123 25	125 34	—	—	21	28 2 N. E. fr. g. cl.
10	11	52	124 36	127 01	—	2 28	20	28 2 N. E. fresh g. fr.
11	13	34	125 39	128 19	—	—	20	28 2 N. E. fresh g. fr.
12	14	46	126 46	129 38	—	—	19 $\frac{1}{2}$	28 2 N. E. fresh g. cl.
13	16	20	127 59	131 51	—	—	19 $\frac{1}{2}$	28 3 Do.
14	17	48	129 13	132 35	—	—	16 $\frac{1}{2}$	28 3 Do.
15	19	11	130 27	134 01	—	4 0	16 $\frac{1}{2}$	28 3 E. N. E. squally w. cl.
16	19	51	132 22	135 50	—	—	16 $\frac{1}{2}$	28 3 { N. E. fr. g. fair. Saw the trunk of a tree. <i>I. N.</i> 32°.
17	19	59	133 34	137 36	—	—	17 $\frac{1}{2}$	28 3 { E. N. E. l. br. varying to the N. E. fair. <i>I. N.</i> 31°.
18	20	03	135 09	139 00	—	6 38	17	28 3 E. N. E. l. br. fair.
19	20	03	136 51	140 52	140 48	6 51	16	28 3 E. fr. g. ft. rain. <i>I. N.</i> 33°.
20	19	58	138 33	142 31	142 20	—	17 $\frac{1}{2}$	28 3 E. N. E. fr. g. fair.
21	19	57	140 12	144 11	144 2	8 20	17 $\frac{1}{2}$	28 3 E. fr. g. fair. <i>I. N.</i> 32°.
22	20	02	142 16	146 24	—	9 0	17 $\frac{1}{2}$	28 3 E. N. E. fr. g. fair.
23	20	07	143 52	148 07	—	9 18	16 $\frac{1}{2}$	28 4 E. fr. g. fair.
24	20	47	145 54	150 26	—	—	18	28 4 Do. <i>I. N.</i> 31°.
25	20	58	148 05	152 36	—	—	19	28 3 E. N. E. fr. g. fair. <i>I. N.</i> 32°.
26	21	00	150 04	154 34	—	9 20	18	28 4 Do.
27	21	03	151 54	156 12	—	—	18	28 4 E. fr. g. fair.
28	20	50	152 56	157 19	—	—	18	28 4 { E. l. br. cl. At 8 o'clock A. M. saw the Sandwich Islands. <i>I. N.</i> 33°.
29	20	34	153 56 158 19 Long. at the place of weigh- ing anch. taken at noon, ac- cording to Cook's chart.	158 25	—	8 40	18	28 4 { E. N. E. l. br. fair. Running along the isle of Mowéé at 1 leag. dif. that of Tahoorowa bore W. 15°. S. at 5 or 6 leagues distance. Anchored at $\frac{1}{2}$ past 5 P. M. in the bay at the S. E. end of the isle of Mowéé, in 25 fathom, bottom fine grey sand.
30	—	—	—	—	—	8 a 34 8 51	19	28 4 { E. varying to the E. S. E. fr. g. Sailed at 3 o'clock P. M. from Mowéé, S. E. varying to the E. S. E. and E. N. E. fr. g. At 6 o'clock P. M. the island Wohao bore S. at about 7 leagues distance. <i>I. N.</i> 20°.
31	21	15	159 34	159 41	—	—	20	28 4 { N. E. varying to E. N. E. fr. g. <i>I. N.</i> 34°.
J. 1	22	53	159 59	160 21	—	—	18	28 5 { E. N. E. fr. g. fair. <i>I. N.</i> 38°.
2	24	49	160 05	160 22	160 16	8 42	—	28 5 Do. <i>I. N.</i> 38°.
3	26	29	160 25	161 00	—	—	18 $\frac{1}{2}$	28 6 E. N. E. fr. g. squally, rain.
4	28	02	160 45	161 15	—	10 27	18	28 5 { E. N. E. varying to the S. E. l. br. fair.
5	29	09	160 45	161 15	—	11 0	19	28 4 { S. E. varying to the S. fr. g. fair. <i>I. N.</i> 44°.
6	30	47	160 22	160 40	—	11 15	17 0	28 2 S. W. squally, much rain.
7	32	15	159 56	161 30	—	—	16 $\frac{1}{2}$	28 2 Fr. g. cl. <i>I. N.</i> 50°.
8	33	54	159 24	159 31	—	11 40	16 $\frac{1}{2}$	28 4 { S. varying to the W. N. W. fr. g. rain.
9	34	57	159 03	—	—	—	15	28 5 { S. l. br. fog and rain. <i>I. N.</i> 53°.
10	35	51	158 43	—	—	—	15	28 5 { S. varying to the E. N. E. fr. g. rain. <i>I. N.</i> 51°.
11	37	02	158 34	—	—	—	12	28 5 { E. varying to the S. W. l. br. rain.
12	38	02	158 15	—	—	—	12	28 4 { S. S. W. fr. g. fog and rain. <i>I. N.</i> 53°.
13	39	19	157 47	—	—	—	12 $\frac{1}{2}$	28 5

June, July, 1786.	Latitude North.	Long. computed West.	Long. W. by the Time Piece, No. 19.	Long. W. by the Dif. of the M. from the Sun.	Declina- tion of the Needle East.	Ther.	Barom.	Winds; State of the Sky; Remarks.
	D. M.	D. M.	D. M.	D. M.	D. M.	D.	P. L.	
J. 14	41 17	157 3	156 15	—	—	11 $\frac{1}{2}$	28 3	{ S. W. fresh g. very foggy. In. N. 56°.
15	43 12	155 48	154 54	—	—	8	28 1	{ W. fresh g. fr. In. N. 59°.
16	44 59	154 25	—	—	—	7 $\frac{1}{4}$	28 1	{ W. N. W. fresh g. misty. In. N. 60°.
17	46 52	152 58	—	—	—	7	28 2	{ W. fresh g. cl. In. N. 61°.
18	48 22	152 4	149 42	—	—	5 $\frac{1}{4}$	28 1	{ W. varying to the S. W. squally, rain. In. N. 64°.
19	50 5	151 10	148 29	—	22 50	5 $\frac{1}{2}$	27 1	{ W. S. W. fr. g. squally, rain at intervals. In. N. 66°.
20	51 50	150 17	147 27	148 4	22 38	5 $\frac{1}{4}$	27 9	{ W. N. W. fresh g. overcast. In. N. 68°.
21	53 17	149 31	—	—	24 49	5 $\frac{1}{2}$	28 1	{ W. varying to the S. E. fr. g. cl. E. fresh g. overcast. Saw
22	55 41	147 48	145 8	—	25 30	5 $\frac{1}{2}$	28 1	{ many fragments of trees and whales. In. N. 72°.
23	57 46	146 0	143 42	—	27 40	6 $\frac{1}{2}$	28 1	{ E. S. E. fresh g. cl. Saw many birds and sea weeds. In. N. 74°.
24	59 22	145 3	143 4	—	—	11	28 0	{ E. S. E. fresh g. fr. At 5 A. M. Saw the coast of N. America, and at noon made Mount St. Elias, bearing N. 32°. W. In. N. 74°.
25	59 33	142 52	142 37	—	—	7 $\frac{1}{2}$	28 0	{ S. S. W. varying to the E. very little wind, foggy. Sounded in 80 fathom, bottom, sand and mud.
26	59 41	143 23	142 41	—	31 14	6	28 1	{ W. S. W. a calm, fr. Mount St. Elias bore W. 42° N. sounded in 45 fathom, bot- tom muddy. At 2 P. M. anchored in 50 fathom, bottom muddy. Set sail at 8 P. M. In. N. 74°.
27	59 18	142 41	—	—	32 19	5 $\frac{1}{4}$	27 8	{ N. N. E. very little wind, foggy, rain. At noon the land was concealed by a fog.
28	59 20	142 35	142 35	—	—	7	27 11	{ E. N. E. varying to E. S. E. very little wind. The nearest land bore N. 15°. W. at 6 leagues distance.
29	59 20	142 2	—	—	—	7	27 11	{ E. varying to S. S. W. fr. g. foggy. The nearest land bore N. 4° W. at about 6 leagues distance.
30	58 54	141 43	141 21	—	32 34	6	28 0	{ S. S. W. little wind, foggy. Cape Fairweather bore N. 78° E. at 10 P. M. anchored in 32 fathoms, bot. muddy.
Jy. 1	59 7	141 3	140 52	—	31 22	7	28 2	{ S. W. l. br. fr. Set sail at 11 A. M. In. N. 76°.
2	58 38	140 28	—	—	30 34	7 $\frac{1}{4}$	28 3	{ W. a calm. Made Mount Fairweather, bearing N. 6° E. At 8 P. M. anchored in the entrance of a harbour which bore N. 39 W. dis- tance a $\frac{1}{2}$ of a league. At 9 P. M. set sail.
3	58 38	140 22	139 46	—	—	5 $\frac{1}{2}$	28 2	{ W. l. br. fr. At 6 A. M. an- chored in the harbour in 6 fathom, bottom sandy.

Lat. at the
Place of
anchor.Lo. at the
Place of
anchor.

July, 1786.	Latitude North.	Long. computed West.	Long. W. by the Time Piece, No. 19.	Long. W. by the Dif. of the M. from the Sun.	Declina- tion of the Needle East.	Ther.	Barom.	Winds; State of the Sky; Remarks.
	D. M.	D. M.	D. M.	D. M.	D. M.	D.	P. L.	
J. 4	At anch. in Port des Francois.	—	—	—	—	6	27 9	N. W. fr. br. During the day shifted anchor; the Isle of Cenotaph bore E. 27°. N. and the entrance of the harbour S. 20°. E.
5	At anch. in a creek N. W. of Port des Francois.	—	—	—	—	8	28 1	S. W. varying to the N. W. very little wind. Shifted anchor to fet the ship clear of the swell at the entrance of the harbour. In. N. 74°.
6	At anch. in the inner extremity of Port des Francois.	—	—	—	—	6	28 1	E. S. E. Set sail and worked farther into the harbour; anchored in 13 fathom bottom muddy; the middle of Cenotaph isle, bore S. E. a half cable's length distance; the entrance of the harbour by the S. W. Point of the Island, bore S. 15° W.
7	Do.	—	—	—	—	8 $\frac{1}{2}$	28 2	E. varying to the S. E. l. br. fr.
8	Do.	—	—	—	—	7 $\frac{1}{2}$	28 2	W. N. W. little wind, fr.
9	Do.	—	—	—	—	8	27 10	A calm, rain.
10	Do.	—	—	—	—	—	—	N. W. little wind, misty.
11	Do.	—	—	—	—	—	—	W. N. W. very little wind, fr.
12	Do.	—	—	—	—	—	—	E. N. E. very little wind, fr.
13	Do.	—	—	—	—	—	—	E. l. br. fr.
14	Do.	—	—	—	—	—	—	W. N. W. little wind, fr.
15	Do. 58 39 Latitude of the Observation.	—	—	—	—	—	—	W. varying to W. S. W. little wind. At 4 A. M. made sail for the entrance of the harbour. At 8 A. M. anchored in 46 fathom, bottom muddy.
16	—	—	—	—	—	—	—	E. N. E. very little wind. At 4 A. M. failed, and anchored at 10, waiting for the tide in 15 fathom, bottom muddy.
17	—	—	—	—	—	8	27 10	E. l. br. rain. Squally weather in the night, harbour bore S. $\frac{1}{2}$ W.
18	At anch. in Port des Francois.	—	—	—	—	11	27 8	E. N. E. fr. g. squally, rain.
19	Do.	—	—	—	—	7 $\frac{1}{2}$	27 11	E. S. E. squally, misty, rain.
20	Do.	—	—	—	—	5	28 3	E. l. br. varying to the N. W. misty.
21	At anch. in the entrance of Port des Francois.	—	—	—	—	6 $\frac{1}{2}$	28 2	W. N. W. very little wind. At 8 A. M. set sail, and at 11 A. M. anchored in a creek to the N. E. in 9 fathoms water; bottom fine sand. The entrance of the harbour bore S. 30° E. and the middle of the isle of Cenotaph, N. 43° E. at 2 leagues distance.
22	Do.	—	—	—	—	6 $\frac{1}{2}$	28 4	W. N. W. fr. l. br. The tide not perceptible at this anchorage.
23	Do.	—	—	—	—	7	28 3	W. S. W. very little wind, fr.

July, Aug. 1786.	Lat. Nor.	Long. computed West.	Long. W. by the Time- Piece, No. 19.	Long. W. by the Dif. of the M. from the Sun.	Declina- tion of the Needle E.	Ther.	Barom.	Winds; State of the Sky; Remarks.
	D. M.	D. M.	D. M.	D. M.	D. M.	D.	P. L.	
J. 24	At anch. in the entrance of Port des Francois.	—	—	—	—	7	28 2	E. S. E. varying to the N. E. 1. br. fr. In. N. 73.
25	Do.	—	—	—	—	7 $\frac{1}{3}$	28 3	E. S. E. 1. br. misty.
26	Do.	—	—	—	—	8	28 1	E. N. E. 1. br. rain.
27	Do.	—	—	—	—	7 $\frac{1}{3}$	27 11	E. varying to the N. E. fr. g. rain.
28	Do.	—	—	—	—	6	27 11	N. E. 1. br. rain.
29	Do.	—	—	—	—	5 $\frac{1}{2}$	28 0	N. E. a calm, rain.
30	Do.	—	—	—	—	6	28 1	W. N. W. 1. br. Made ready the sails, &c
31	Do.	—	—	—	—	5	28 2	W. N. W. very little wind, fair. Set sail at 4, P. M.
A. 1	58 22 Took for point of departure 58 d. 26 m. 25 f. N. latit. & 139 d. 50 m. W. long. the meridian of Paris.	139 46	—	—	31 0	8	28 2	W. N. W. 1. br. fair. At noon the entrance of Port des Francois bore N. 10°, W, at about 4 leagues dif.
2	58 24	139 40	—	—	—	—	—	N. W. varying to the S. S. W. very little wind, fair. Mount Fair Weather bore N. 19° W. the entrance of Port des Francois N. 10° W.
3	58 12	139 31	—	—	30 20	—	—	W. very little wind, misty. The entrance of the bay of Crofs-found bore N. 48° E. at about 8 leagues dif.
4	57 47	138 39	—	—	—	—	—	E. varying to the S. S. W. by S. very little wind. The nearest land bore N. 45° E. at about 6 leag. dif.
5	57 24	138 0	—	—	—	9	28 2	E. very little wind, foggy.
6	57 18	138 13	138 32	—	28 37	8 $\frac{1}{3}$	28 1	W. N. W. very little wind, fair. The entrance of Port de los Remedios bore E. 32° N. dif. about 6 leag.
7	56 30	137 19	137 25	—	28 20	9 $\frac{1}{3}$	28 1	N. E. very little wind, fair. Mount Hyacinth bore N. 56° W. and Cape Tschiri- kow E. 23° S. I. N. 73°.
8	55 41	136 40	136 48	—	28 46	9	28 3	W. fair. 1. br. Cape Tschir- rikow bore N. 38° W. at about 3 leagues distance.
9	54 46	135 49	136 7	—	—	10	28 3	W. fr. g. misty. The middle of Isle San Carlos bore N. 27° E. dif. about 2 leag.
10	54 23	135 27	135 3	—	—	9 $\frac{1}{2}$	28 2	W. N. W. fr. g. very thick fog.
11	54 12	135 21	135 14	—	—	9 $\frac{1}{2}$	28 2	N. N. W. 1. br. foggy.
12	54 6	136 11	—	—	30 14	8 $\frac{1}{3}$	28 1	Do.
13	54 4	136 15	—	—	—	9	28 1	S. very little wind, foggy.
14	53 50	135 51	135 46	—	—	9 $\frac{1}{2}$	28 3	S. varying to the E. S. E. very thick fog. Saw in the day, land, at about 8 or 10 leagues distance.
15	53 50	135 40	135 59	—	—	9 $\frac{1}{3}$	28 3	E. 1. br. misty. At 10 A.M. saw land from N. E. to E. about 10 leagues distant. At noon, foggy.

Aug. 1786.	Latitude North.	Long. computed West.	Long. W. by the Time Piece, No. 19.	Long. W. by the Dif. of the M. from the Sun.	Declina- tion of the Needle N.	Ther.	Barom.	Winds; State of the Sky; Remarks.
	D. M.	D. M.	D. M.	D. M.	D. M.	D.	P. L.	
16	53 20	136 17	—	—	—	10 $\frac{1}{2}$	28 1	E. l. br. misty. Saw land in the day, 8 or 10 leagues distant. Foggy at intervals. N. E. very little wind, misty. At half past 5, the land bore from N. E. $\frac{1}{4}$ E. to E. S. E. distant about 8 leagues. At noon foggy.
17	53 12	136 7	136 36	—	27 54	10	28 0	N. W. l. br. fr. The entrance of Port de la Touche bore N. 21° E. at about 4 leagues distance. In. N. 78°.
18	52 35	134 21	134 1	—	27 56	10	28 0	N. W. varying to the S. W. little wind, misty. The nearest land bore N. 18° E. at 5 leagues distance.
19	52 3	134 1	134 1	—	25 38	11	28 1	N. W. varying to the W. l. br. fr. Cape Hector bore N. 1° E. and the isles Kerouart, N. 5° E. the Cape distant 3 leagues, and the isles $2\frac{1}{2}$. At 7 P. M. sounded in 100 fathoms bottom rocky.
20	51 40	133 19	133 33	—	24 8	11	28 1	W. varying to the S. S. W. fresh g. fr. Cape Hector bore S. 59° W. distant about 6 leagues; the largest of the Kerouart islands, S. 48° W. distant $6\frac{1}{2}$ leagues, In. N. 73°.
21	52 1	132 48	132 50	—	24 3	11	28 0	S. varying to the S. E. fresh g. misty. Saw land at 11 A. M. the nearest in sight, bearing N. 76° E; the most westerly land N. 15° W. at about 6 leagues distance. At noon foggy.
22	55 22	131 38	—	—	—	10	28 3	S. E. heavy g. fog. At $\frac{1}{2}$ past 5 A. M. saw a range of islands, gave the name of Cape Fleurieu to the most westerly, which bore N. 25° E. distant 9 leagues, At noon, foggy.
23	51 47	132 5	131 43	—	24 31	11	28 3	W. N. W. l. br. foggy. The Sartine islands bore S. 65° E. at about 3 leagues distance. In. N. 67°.
24	51 1	131 23	131 27	—	—	11 $\frac{1}{2}$	28 3	W. N. W. l. b. fr. varying to the N. W. Point Boissée, N. 33° E.
25	49 59	129 58	130 5	—	24 10	12	28 3	E. S. E. very little wind, foggy.
26	49 16	129 25	129 37	—	22 18	12	28 0	W. S. W. a calm, very thick fog.
27	48 59	129 46	—	—	—	12	28 0	N. l. br. foggy. At 2 P. M. saw land from N. to E. N. E. distant about 6 leagues, soon after foggy. In. N. 68°.
28	48 37	128 45	128 55	—	19 38	12 $\frac{1}{2}$	28 0	W. N. W. fr. g. misty. At 10 A. M. sounded in 45 & 35 fathoms bottom grey sand. In. N. 68°.
29	48 39	127 57	128 4	—	19 31	12 $\frac{1}{2}$	28 2	

Aug. Sept. 1786.	Lat. Nor.	Long. computed West.	Long. W. by the Time- Piece, No. 19.	Long. W. by the Dif. of the M. from the Sun.	Declina- tion of the Needle E.	Ther.	Barom.	Winds; State of the Sky; Remarks.
	D. M.	D. M.	D. M.	D. M.	D. M.	D.	P. L.	
A. 30	48 39	127 58	—	—	—	12 ½	28 2	{ S. S. W. fr. g. misty, rain. Sounded in 90 fathom, bottom muddy; a fog.
31	47 58	127 45	127 58	—	—	12	28 1	{ N. W. fr. g. very thick fog. W. N. W. very little wind; fr. g. at sun-set. At noon saw land to the E. about 12 leagues distant.
S. 1	46 39	126 20	126 45	126 37	18 53	11	28 1	{ N. very little wind, fair, Cape Round bore S. 48° E. at 6 leagues distance.
2	45 57	125 58	126 30	—	17 7	11	28 3	{ S. S. W. almost a calm, fair Cape Round bore S. 81° E. distant 5 leagues.
3	45 55	126 17	126 16	—	—	11	28 4	{ N. N. E. fr. g. foggy.
4	44 41	126 31	126 38	—	—	12	28 3	{ N. l. br. foggy. Saw land yesterday and to-day. I. N. 61°.
5	43 0	126 34	126 48	—	15 0	12	28 2	{ N. N. E. fr. g. foggy. Land out of sight by 10 A. M.
6	41 27	—	—	—	15 50	11 ¼	28 1	{ N. W. l. br. foggy.
7	40 48	126 23	126 60	—	15 33	10 ⅔	28 2	{ N. N. W. a fine br. fair. At 10 saw land, which bore E. distant about 8 leagues.
8	39 54	126 50	127 7	—	14 24	12	28 2	{ N. N. W. fr. g. overcast.
9	39 2	126 29	—	—	—	12	28 0	{ N. W. l. br. overcast. I. N. 57°
10	38 16	126 18	—	—	—	11 ½	28 0	{ N. W. fr. g. overcast. I. N. 57°.
11	37 02	125 45	126 15	—	—	12	28 0	{ N. W. fr. g. misty. I. N. 57°.
12	36 56	124 05	124 52	—	—	10 ½	28 0	{ N. W. fr. g. foggy.
13	36 42	123 53	123 47	—	—	12	28 0	{ N. W. l. br. misty, a fog at intervals. The most easter- ly land in sight bore S. 39° E. the most westerly N. 20° W. distance of the nearest land about 3 leag I. N. 57°
14	36 51	123 16	123 46	124 34	12 55	12	28 0	{ N. W. varying to the S. W. fair. At 6 P. M. anchored in 46 fathom, bottom muddy; the place of an- chorage at the bottom of the bay of Monterey bore S. 5° W. distant 2 leagues. Sailed at 11 A. M.
15	—	—	—	—	11 57	—	—	{ W. fr. g. fair. At 1 o'clock P. M. anchored in 12 fa- thom, bottom fine sand; the landing place bore S. 10° W. the presidio S. 6° E. land distant not more than a quarter of a league.
16	—	—	—	—	—	—	—	{ W. N. W. fr. g. fair.
17	—	—	—	—	—	—	—	{ Do.
18	—	—	—	—	—	—	—	{ W. S. W. l. br. fair.
19	—	—	—	—	—	—	—	{ W. fr. g. fair.
20	—	—	—	—	—	—	—	{ W. N. W. l. br. fair.
21	—	—	—	—	—	—	—	{ W. N. W. varying to the S.
22	—	—	—	—	—	—	—	{ W. l. br. fair.
23	—	—	—	—	—	—	—	{ W. N. W. fr. g. fair,

Sept. Oct. 1786.	Lat. Nor.		Longitude computed West.		Long. W. by the Time. Piecc. No. 19.	Lon. W. by the Dif. of the M. from the Sun.	Declina- tion of the Needle W.	Ther.	Barom.	Winds; State of the Sky; Remarks.	
	D.	M.	D.	M.	D.	M.	D.	M.	P.	L.	
S. 24	36	38	123	44	123 46 By its go- ing since leav. Tal- caguana.	123 34 Long. of the Point of Depart.	11	24	—	—	N. W. almost a calm. At 4 A. M. set sail from Mon- terey; at 9, a calm; anc- hored in 30 fathom, bot- tom muddy; the fort bore S. 27° E. distant 2 leagues. Sailed at 1 o'clock P. M.
25	36	43	123	50	—	—	—	—	—	—	W. N. W. varying to the S. At noon, the fort bore E. 7° S. distant 5 leagues; and Cypress Point, on this side of the fort, bore also E. 7° S.
26	36	41	124	23	123 24	—	12	59	—	—	W. N. W. fr. g. fair.
27	35	44	125	7	—	—	—	13	—	—	{ W. N. W. fr. g. misty. I. N. 52°.
28	34	12	126	39	—	—	—	13	—	—	N. W. fr. g. foggy.
29	32	44	128	52	127 49	128 24	—	13 1/2	—	—	N. fr. g. fair. I. N. 50°.
30	30	58	130	55	—	—	9	19	14 1/4	—	N. N. E. fr. g. cl.
O. 1	29	24	132	34	—	—	9	46	14 1/2	—	N. fr. g. fair.
2	28	39	134	0	—	—	9	30	15	—	N. E. l. br. fair.
3	28	10	135	13	—	—	9	35	15	—	Do. misty.
4	27	54	135	49	134 50	—	8	39	15 1/2	—	{ W. N. W. very little wind, fair. I. N. 43°.
5	27	29	136	16	135 29	—	9	14	15 1/2	—	N. W. very little wind, fair.
6	27	35	137	34	136 55	—	10	20	15 1/2	—	E. N. E. l. br. fair.
7	27	55	138	36	—	—	—	16	—	—	Do. I. N. 42°.
8	28	03	139	57	—	—	8	27	16	—	Do.
9	27	60	141	21	140 31	—	8	24	17	—	E. S. E. l. br. misty.
10	27	59	143	03	—	—	9	13	17	—	Do.
11	27	53	144	42	143 42	—	—	17	—	—	Do. I. N. 41°.
12	27	52	145	12	—	—	—	16 1/4	—	—	S. very little wind, misty.
13	27	51	145	32	144 52	—	8	38	16 1/4	—	{ S. very little wind, foggy. I. N. 41°.
14	27	44	146	36	146 1	147 44	—	17 1/4	28 3	—	S. E. l. br. fair.
15	27	52	148	14	148 4	—	9	24	17 1/2	28 3	S. E. fr. g. misty. I. N. 41°.
16	27	55	148	14	—	—	9	28	17 1/2	28 3	{ A calm, a fr. br. from the S. S. E. misty.
17	27	49	148	46	148 8	149 26	—	18	28 3	—	A calm, thunder and rain.
18	27	44	149	49	—	—	9	34	18	28 4	A calm, ft.
19	28	02	149	11	—	—	9	40	17	28 3	S. W. l. br. misty.
20	27	37	149	48	—	—	8	57	17	28 3	{ N. E. varying to S. W. by E. very little wind, rain. I. N. 41°.
21	27	44	149	48	149 42	—	—	17	28 1	—	{ S. S. W. very little wind, fair. Saw many birds.
22	28	7	151	21	—	—	8	57	17	28 0	A calm, rain.
23	28	4	151	42	150 51	—	—	17 1/2	28 2	—	{ S. S. W. varying to N. E. by E. very little wind, rain.
24	27	46	153	42	152 51	—	10	14	17 1/2	28 1	{ N. varying to the S by E. heavy g. rain.
25	27	27	153	56	—	—	—	16 1/2	23 2	—	{ N. very little wind, fair. I. N. 40°.
26	27	24	154	41	153 57	155 14	10	11	17	28 2	{ N. N. W. fair, a calm. Saw a number of sea-swallows.
27	27	0	155 17 Lon. cor. by the obl. of dist.	—	—	—	—	18 1/2	28 2	—	S. S. E. fr. g. rain.
28	26	52	158	38	—	—	9	18	19 1/2	28 1	S. S. E. fr. g. squally w. cl.
29	27	9	159	11	157 23	—	—	18	28 1	—	S. S. W. ft. rain.

N. B. The West longitude of Monterey according to all the distances taken along the coast, and referred to this port by the time-piece No. 19, is 124 deg. 3 min.

Oct. Nov. Dec. 1786.	Lat. Nor.		Long. computed West.		Long. W. by the Time Piece, No. 19.		Long. W. by the Dif. of the Mn. from the Sun.		Declina- tion of the Needle E.		Ther.		Barom.		Winds; State of the Sky; Remarks.
	D.	M.	D.	M.	D.	M.	D.	M.	D.	M.	D.	P.	L.		
O. 30	26	20	159	4	157	52	—	—	17	$\frac{1}{2}$	28	0		W. S. W. l. br. fair. I. N. 37°.	
31	26	27	159	23	—	—	—	—	18	$\frac{1}{4}$	28	2		E. S. E. very little wind, fair.	
N. 1	25	40	160	50	—	—	—	9	20	18	28	3		E. S. E. fr. g. fair.	
2	24	30	163	5	161	0	—	—	18	$\frac{1}{2}$	28	2		E. fr. g. fair. I. N. 36°.	
3	24	4	165	2	—	—	—	—	20	28	2			{ E. varying to the S. E. fresh g. Saw many birds.	
4	23	29	166	38	164	40	—	9	1	20	28	2		{ E. gusts of wind. Saw some birds. At 5, P. M. saw in the W. an isl. to which the name of Neckar was given. I. N. 34°.	
5	23	35	167	25	165	40	—	9	37	20	28	2		{ E. N. E. fresh g. At noon, Neckar island bore E. 8°. N. at 4 leagues distance. I. N. 34°.	
6	23	38	168	39	166	47	—	9	36	20	28	2		{ E. N. E. fr. g. fair. At half past one A. M. saw break- ers very near us, bearing from N. to S. W. by W. at noon, a small island at the N. W. point of the breakers, bore N. distant about 2 leagues.	
7	23	33	169	20	—	—	—	8	57	19	$\frac{3}{4}$	28	1		A calm, fair. Saw many birds.
8	22	52	170	28	—	—	—	—	17	28	1			N. Squally w. cl.	
9	21	31	172	32	—	—	—	8	38	15	28	1			N. N. W. squally, cl.
10	21	11	174	22	173	55	—	—	16	28	2				N. fr. g. cl.
11	21	7	175	33	175	19	176 47	—	17	28	1				W. l. br. fair.
12	21	13	175	59	175	58	177 27	8	47	19	$\frac{1}{2}$	28	0		S. S. W. fr. g. fair.
13	21	8	177	53	—	—	—	9	30	18	$\frac{1}{2}$	27	11		W. fresh g. rain.
14	20	47	178	14	176	50	—	10	6	19	28	0			W. N. W. l. br. misty.
15	20	31	178	32	177	15	178 44	—	19	$\frac{1}{4}$	28	1			W. N. W. l. br. fair.
16	20	13	179	27	179	6	Long. E.	12	9	19	28	2			N. E. squally, cl.
17	20	6	177	45	179	13	—	—	19	$\frac{1}{2}$	28	2			N. l. br. fair.
18	19	54	176	51	178	35	—	12	12	20	28	2			N. N. W. l. br. fair.
19	19	28	176	12	178	0	—	13	0	20	28	2			N. W. fr. g. cl.
20	19	36	175	15	176	56	—	12	14	20	$\frac{1}{2}$	28	2		{ N. W. varying to the N. E. l. br. fair.
21	19	57	174	18	176	4	—	11	27	20	28	2			S. l. br. fair.
22	20	8	173	36	175	11	—	12	14	21	28	1			W. N. W. fresh g. misty.
23	19	30	172	42	174	11	—	11	52	19	28	1			Do.
24	19	41	172	3	—	—	—	12	30	20	28	1			S. S. W. fresh g. cl. heavy sea.
25	20	39	171	2	172	32	—	12	27	21	28	1			W. S. W. squally, heavy g. cl.
26	20	29	169	58	171	30	170 5	13	24	21	$\frac{1}{4}$	28	2		N. fresh g. cl.
27	20	44	168	18	170	1	168 42	12	36	20	28	2			N. E. gusts of wind, cl.
28	20	18	166	38	168	9	166 47	11	42	19	28	3			E. N. E. l. br. fair.
29	20	39	165	4	166	28	164 54	12	12	19	28	2			E. S. E. l. br. fair.
30	20	26	163	41	165	2	—	10	35	19	$\frac{1}{2}$	28	2		E. S. E. l. br. fair.
D. 1	20	51	163	1	164	25	—	12	34	19	28	1			S. S. W. little wind, fair.
2	21	34	162	28	—	—	—	12	32	20	$\frac{1}{4}$	28	1		W. l. br. misty.
3	20	47	162	1	—	—	—	—	19	28	1				W. N. W. heavy g. squally, r.
4	20	46	160	24	161	54	—	9	59	19	$\frac{1}{4}$	28	2		N. fresh g. misty.
5	20	59	158	19	159	50	—	10	44	19	$\frac{1}{2}$	28	2		N. E. fr. g. fair, heavy sea.
6	20	58	156	24	158	5	—	11	18	19	$\frac{1}{2}$	28	2		E. varying to the S. E. fr. g. fr.
7	21	23	155	54	—	—	—	—	18	28	1				S. W. very little wind, misty.
8	21	19	154	42	155	51	—	9	14	18	$\frac{1}{2}$	28	2		N. E. fresh g. misty.
9	20	49	152	40	153	36	—	8	24	18	28	3			E. N. E. fresh g. cl.
10	20	57	150	49	—	—	—	8	0	19	28	3			E. fr. g. fair.
11	20	46	148	58	150	5	148 34	7	13	19	$\frac{3}{4}$	28	3		E. S. E. fresh g. fair.
12	20	28	147	05	147	05	146 33	5	49	20	28	2			Do.
13	20	21	145	55	146	47	—	—	20	$\frac{1}{4}$	28	2			S. W. very little wind, misty.

Dec. & Jan. 1786, 1787.	Lat. Nor.		Long. E. by the Time Piece, No. 19.		Long. E. by the Dif. of the Min. from the Sun.		Declina- tion of the Needle E.		Ther.	Barom.	Winds, State of the Sky; Remarks.			
	D.	M.	D.	M.	D.	M.	D.	M.	D.	P. L.				
D. 14	20	15	144	33	145	16	—	—	19	28	2	{ N. E. heavy g. squally, cl. At 1 o'clock at noon saw Assumption isl. S. W. $\frac{1}{2}$ W. at about 10 leagues distant. N. E. fr. g. cl. At noon, Assumption island bore E. 13° N. distance about two thirds of a league; the Mangs islands bore N. 30° W. at 6 leagues distance.		
15	19	43	144	3	144	46	—	6	14	19 $\frac{4}{3}$	28		2	
16	20	2	141	51	143	21	—	—	20	28	2	E. N. E. fr. g. fair.		
17	19	53	140	38	142	4	—	5	33	19 $\frac{1}{4}$	28	2	E. l. br. fair.	
18	20	2	139	34	140	58	—	4	58	20 $\frac{1}{4}$	28	1	{ W. N. W. very little wind, misty.	
19	19	49	139	2	140	28	—	5	1	20	28	1	{ N. W. very little wind, cl.	
20	19	39	137	53	138	55	—	4	7	18 $\frac{1}{2}$	28	2	{ N. W. l. br. fair. Direction of the surge or waves from the North.	
21	19	36	136	16	137	37	—	3	1	17 $\frac{1}{2}$	28	2	N. N. E. fr. g. fair.	
22	19	58	134	43	136	19	—	3	0	19	28	2	E. N. E. fr. g. fair.	
23	20	8	133	7	—	—	—	2	11	19	28	3	N. E. fr. g. fair.	
24	20	41	130	26	—	—	—	—	18 $\frac{1}{2}$	28	3	3	N. E. heavy gale, fair.	
25	20	34	128	26	129	48	127	43	1	53	18	28	3	E. varying to the N. fr. g. fair.
26	20	23	125	32	—	—	—	—	0	45	16	28	4	N. N. E. heavy g. cl.
									Weh.					
27	21	13	123	25	125	4	123	21	0	33	14	28	4	E. fresh g. misty, rain.
28	21	8	121	32	122	48	120	57	0	41	16 $\frac{1}{2}$	28	4	E. fresh g. gusts of w. cl.
29	21	15	120	40	121	43	119	44	0	12	17 $\frac{1}{2}$	28	3	{ E. N. E. fr. g. fair. At noon the most northerly of the Bashee islands, bore S. 4° W. distant about 3 leagues.
30	21	19	118	40	120	25	—	0	23	18 $\frac{1}{2}$	28	34	{ E. varying to the N. N. E. fresh g. cl. w. At sun-rise saw one of the Bashee islands. E. 34° S.	
31	22	20	116	19	—	—	—	—	17	28	1	1	N. N. E. heavy g. squally, misty.	
1787 J. 1	22	19	113	54	115	55	—	0	30	14 $\frac{1}{4}$	28	4	N. N. E. and N. E. heavy g. cl.	
														{ E. N. E. fr. g. cl. At 5 o'clock, A. M. saw the Piedra-Blanca, to the N. N. N. E. distant 2 leagues. At noon, saw a number of islands; the great Lamma bore S. 65° W. at 5 leagues distance; at 7 P. M. anchored in 14 fathom, bottom muddy, at the distance of 12 leagues from Macao, which bore W. 1° S.
2	22	10	112	29	—	—	—	—	12	28	4	4	{ N. fresh g. squally. At one P. M. anchored in $5 \frac{1}{2}$ fat. bottom muddy, about one league and a half from Macao, which bore W. 1° S.	
3	At Macao till Feb. 5th.	—	—	—	—	—	—	—	12 $\frac{1}{2}$	28	4	4	{ N. N. E. fresh g. varying at $\frac{1}{2}$ past 11 to the N.	
6	—	—	—	—	—	—	—	—	—	—	—	—	{ N. E. fresh g. fr.	
7	—	—	—	—	—	—	—	—	—	—	—	—	{ N. E. fresh g.	
8	—	—	—	—	—	—	—	—	—	—	—	—	{ Here the date is changed to the E. of the Meridian of Paris.	
9	—	—	—	—	—	—	—	—	—	—	—	—	E. little wind, fr.	

Jan. Feb. 1787.	Latitude North.	Long. computed East.	Long. E. by the Time Piece, No. 19.	Long. E. by the Dif. of the M. from the Sun.	Declina- tion of the Needle W.	Ther.	Barom.	Winds; State of the Sky; Remarks.
	D. M.	D. M.	D. M.	D. M.	D. M.	D.	P. L.	
J. 10	—	—	—	—	—	—	—	E. N. E. fr. g. fair.
11	—	—	—	—	—	—	—	E. fr. g. fair.
12	—	—	—	—	—	—	—	N. E. fr. g. fair.
13	—	—	—	—	—	—	—	E. N. E. fr. g. fair.
14	—	—	—	—	—	—	—	N. E. l. br. misty.
15	—	—	—	—	—	—	—	N. E. squally, misty.
16	—	—	—	—	—	—	—	N. E. fr. g. misty.
17	—	—	—	—	—	—	—	N. N. E. heavy g. misty.
18	—	—	—	—	—	—	—	N. E. fr. g. fair.
19	—	—	—	—	—	—	—	N. N. E. fr. g. fair.
20	—	—	—	—	—	—	—	N. N. E. heavy g. fair.
21	—	—	—	—	—	—	—	N. heavy g. fair.
22	—	—	—	—	—	—	—	N. N. E. fr. g. fair.
23	—	—	—	—	—	—	—	Do.
24	—	—	—	—	—	—	—	A calm, rain.
25	—	—	—	—	—	—	—	N. N. E. fr. g. fair.
26	—	—	—	—	—	—	—	E. l. br. fair.
27	—	—	—	—	—	—	—	N. N. E. fr. g. fair.
28	—	—	—	—	—	—	—	N. E. l. br. fair.
29	—	—	—	—	—	—	—	Do.
30	—	—	—	—	—	—	—	E. N. E. l. br. fair.
31	—	—	—	—	—	—	—	N. N. E. l. br. misty.
F. 1	—	—	—	—	—	—	—	N. l. br. misty.
2	—	—	—	—	—	—	—	Do.
3	—	—	—	—	—	—	—	N. E. fr. g. misty.
4	—	—	—	—	—	—	—	N. l. br. fair.
5	21 60	111 39	—	—	—	12	28 1	N. fr. g. Sailed from Macao at 7 A. M.; at noon, the greatest of the Ladrone islands bore N. 32° W.
6	21 59	112 26	—	—	0 32	11 1/2	28 1	N. fr. g. fair.
7	22 6	112 39	—	—	—	13 1/4	28 1	N. E. fr. g. fair.
8	21 36	112 50	—	—	—	16	28 2	N. E. fr. g. misty.
9	20 55	113 27	—	—	0 15	17	28 2	E. N. E. fr. g. fair.
10	19 57	114 45	—	—	—	18	28 2	N. N. E. squally, cl.
11	18 52	115 41	—	—	0 50	18 1/2	28 2	N. E. fr. g. fair.
12	18 31	115 57	—	—	—	20 1/2	28 2	Do.
13	18 15	116 27	—	—	—	21	28 1	E. N. E. fr. g. fair.
14	18 11	117 20	—	—	—	21 1/2	28 1	E. S. E. little wind, fair.
15	18 15	117 24	—	—	0 36	22	28 1	S. S. E. very little wind, fair.
16	17 54	118 0	—	—	0 2	22	28 0	W. S. W. very little wind, fair. At noon the island of Bantam bore E. 37° S. at 6 leagues distance.
17	17 40	117 52	—	—	—	21	28 0	S. W. l. br. fair. At noon the isle of Bantam bore E. 19° S. at 5 leagues distance.
18	18 1	117 41	118 16	—	—	28	28 1	W. S. W. very little wind, fair. Bantam isle bore E. 33° S.
19	17 40	117 54	118 1	—	—	21	28 1	N. fr. g. fair. At noon the isle Bantam bore S. 57° E.
20	15 44	117 28	—	—	—	21 1/2	28 2	E. fr. g. fair. At noon the point Capones bore N. 75° E.
21	14 30	117 25	—	—	—	22 1/2	28 2	E. l. br. fair. The point Capones bore N. 75° E.
22	14 30	117 52	—	—	—	21 1/2	28 1	N. E. fr. g. Point Mirabella bore S. 82° E.; the middle part of the island Mirabella S. 88° E.

Feb. Mar. 1787.	Lat. North.		Long. computed East.	Long. E. by the Time- Piece, No. 19.	ong. E. by the Dif. of the M. from the Sun.	Declina- tion of the Needle W.	Ther.	Barom.	Winds; State of the Sky; Remarks.	
	D.	M.	D.	M.	D.	M.	D.	P.	L.	
F. 23	14	23	118	13	—	—	22	28	2	{ E. l. br. fr. The Porcos bore N. 52° E. and the Moha. N. 87° E. At half past 5 P. M. anchored in the port of Mirabella. Wind the same, till the 24th at noon.
24	—	—	—	—	—	—	—	—	—	E. N. E. fresh g.
25	—	—	—	—	—	—	21 ½	28	1	{ N. E. fresh g. fr. failed at 8 A. M. At 6 P. M. anchored in the Bay of Manilla.
26	—	—	—	—	—	—	23	28	1	{ E. N. E. l. br. stood off and on for port Cavite. The Moha bore S. 5° E. Sailed at 5, A. M. At noon, port Cavite bore E. 8° N. At 7 P. M. anchored in a part of Cavite, N. 65° W. in 11 fathom, bottom muddy.
27	—	—	118	18	—	—	—	—	—	{ N. N. E. varying to the E. N. E. fresh g. fr. At 5, A. M. set sail, and at 8, anchored in the port of Cavite, two cables length distance from land. Here we remained till Ap. 11.
28	—	—	—	—	—	—	—	—	—	{ E. N. E. fresh g. fr. The fort of Cavite bore N. ¼ N. E. we anchored in 3 ½ fathom, high water.
M. 1	—	—	—	—	—	—	—	—	—	A calm, fair.
2	—	—	—	—	—	—	—	—	—	N. fresh g. fr.
3	—	—	—	—	—	—	—	—	—	N. N. E. fresh g. fr.
4	—	—	—	—	—	—	—	—	—	N. E. fresh g. fr.
5	—	—	—	—	—	—	—	—	—	Do.
6	—	—	—	—	—	—	—	—	—	E. N. E. fresh g. fr.
7	—	—	—	—	—	—	—	—	—	N. E. fr. g. fair.
8	—	—	—	—	—	—	24	28	1	Do.
9	—	—	—	—	—	—	24	28	1	E. N. E. fr. g. fair.
10	—	—	—	—	—	—	—	—	—	N. E. fr. g. fair.
11	—	—	—	—	—	—	—	—	—	Do.
12	—	—	—	—	—	—	—	—	—	{ E. N. E. fr. g. fair. Shifted anchor in the day, and anchored in 4 fathom, bottom muddy. the fort of Cavite bore N. 16° E.
13	—	—	—	—	—	—	—	—	—	E. N. E. fr. g. fair.
14	—	—	—	—	—	—	—	—	—	N. E. fr. g. fair.
15	—	—	—	—	—	—	—	—	—	N. fr. g. fr.
16	—	—	—	—	—	—	—	—	—	N. N. E. fr. g. fr.
17	—	—	—	—	—	—	—	—	—	{ E. N. E. varying to the N. fr. g. fair.
18	—	—	—	—	—	—	—	—	—	E. l. breeze, fair.
19	—	—	—	—	—	—	—	—	—	E. N. E. fr. g. fair.
20	—	—	—	—	—	—	—	—	—	N. N. E. fr. g. fair.
21	—	—	—	—	—	—	—	—	—	Do.
22	—	—	—	—	—	—	—	—	—	N. E. fr. g. fair.
23	—	—	—	—	—	—	—	—	—	Do.
24	—	—	—	—	—	—	—	—	—	E. N. E. fr. g. fair.
25	—	—	—	—	—	—	—	—	—	N. E. fr. g. fair.
26	—	—	—	—	—	—	—	—	—	Do.

March & April, 1787.	Latitude North.	Long. computed East.	Long. E. by the Time Piece, No. 19.	Long. E. by the Dif. of the M. from the Sun.	Declina. tion of the Needle W.	Ther.	Barom.	Winds; State of the Sky; Remarks.
	D. M.	D. M.	D. M.	D. M.	D. M.	D.	P. L.	
M 27	—	—	—	—	—	—	—	N. fr. g. fair.
28	—	—	—	—	0 33	—	—	N. N.W. fr. g. fair. <i>I.N.</i> 11°.
29	—	—	—	—	—	—	—	N. E. fr. g. fair.
30	—	—	—	—	—	—	—	E. N. E. fr. g. fair.
31	—	—	—	—	—	—	—	Ditto.
A. 1	—	—	—	—	—	—	—	Ditto.
2	—	—	—	—	—	—	—	N. E. fr. g. fair.
3	—	—	—	—	—	—	—	E. N. E. fr. g. fair.
4	—	—	—	—	—	—	—	N. E. fr. g. fair.
5	—	—	—	—	—	—	—	Ditto.
6	—	—	—	—	—	—	—	Ditto.
7	—	—	—	—	—	—	—	Ditto.
8	—	—	—	—	—	—	—	{ N. E. fr. g. Towed the ship about 3 cables length N. E. ½ E. The fort of Cavite bore N. 60° E.
9	—	—	—	—	—	—	—	{ N. E. fr. g. Towed the ship N. 3 small cable's length, (grelins;) fort Cavite bore N. 88° E.
10	—	—	—	—	—	—	—	{ N. E. fr. g. fair. Made preparations for sailing.
11	14 24	—	117 58	—	—	21	28 2	{ N. E. fr. g. fair. Set sail at noon. Fort Cavite bore N. 90° E. at ½ league distance. W. N. W. very little wind, fair. The N. point of the island of Two Sisters bore N. 46° E. distant a league
12	15 42	117 36	—	—	—	20 ½	28 2	{ N. l. br. fair. Point Bolnæc bore E. 27° N.
13	16 23	117 2	117 20	—	—	21	28 3	{ E. S. E. a calm. The most northerly land in sight bore S. 63° E.
14	16 47	117 9	117 42	—	—	21	28 1	{ A calm, fair.
15	17 1	117 7	117 41	—	—	20 ½	28 1	{ N. l. br. At noon a calm.
16	17 28	117 9	118 0	—	E.	21	28 2	{ N. N. W. l. br. fair.
17	18 9	116 59	117 44	—	—	21	28 2	{ E. N. E. l. br. fair.
18	19 28	117 0	117 38	—	—	21	28 1	{ E. l. br. fair.
19	20 59	117 39	117 39	—	—	21 ½	28 1	{ N. N. E. very little wind, fair.
20	21 24	117 47	117 20	—	—	18 ½	28 1	{ E. l. br. fair.
21	21 38	117 17	—	—	—	17 ½	28 3	{ N. N. E. l. br. fair.
22	22 2	117 13	117 14	—	—	16 ½	28 3	{ N. l. br. fair.
23	22 2	117 38	—	—	—	16 ½	28 3	{ N. N. W. very little wind, fair.
24	22 24	118 7	118 1	117 58	—	16 ½	28 3	{ N. N. E. fr. g. fair.
25	22 47	117 16	117 7	—	—	16 ½	28 3	{ N. N. E. fr. g. fair. For several days before, had sailed over a bank, where we sounded from 22 to 12 fath. bottom a rocky sand.
26	22 56	116 45	116 39	—	—	16	28 5	{ N. N. W. very little wind, fair. Port Zealand bore E. 30° S. distant 3 leagues. At 4 P. M. anchored in 17 fathom, bottom muddy.
27	22 32	117 42	117 59	118 16	—	18	28 5	{ N. N. W. very little wind. Sailed at 4 A. M. Port Zealand bore S. 35° E. distant 4 leagues. At noon a calm. At 7 P. M. anchored in 37 fathom, bottom muddy. Set sail, the wind at N. N. E.
28	22 52	117 49	117 42	—	—	18	28 5	

April, May, 1787.	Latitude North.		Long. computed East.	Long. E. by the Time Piece, No. 19.	Long. E. by the Dif. of the M. from the sun.	Declina- tion of the Needle East.	Ther.	Barom.	Winds; State of the Sky; Remarks.
	D.	M.	D. M.	D. M.	D. M.	D. M.	D.	P. L.	
A. 29	23	24	—	117 45	—	—	—	—	N.N.E. heavy g. squally w. cl.
30	22	9	—	117 55	—	—	—	—	N. E. l. br. fr. At 6 P. M.
M. 1	21	45	—	118 19	—	—	—	—	the most southerly of the
2	21	44	—	119 22	—	—	—	—	islands Pescadores bore N.
3	21	57	Lat. & Lo. of the E. point of the great is. Botol, or Tabo- co-xima.	119 29	—	—	20	28 3	64° W. distant about 2 l.
4	22	14	119 33	119 29	—	—	20	28 1	E. S. E. l. br. fr. The island
5	22	40	120 11	120 13	—	—	19	28 2	Lamay bore N. 38° E. dis- tant 6 leagues.
6	24	28	Lat. & Lo. of the N. point of of the is. Kumi.	120 49	—	—	19 ½	28 1	S. E. varying to the N. by E.
7	24	30	120 32	120 47	—	—	—	—	l. br. it. and r. At noon,
8	25	44	Lat. & Lo. of South Island.	121 14	—	—	—	—	the isle of Botol, or Tabo- co-xima bore N. 7° W.
9	25	55	Lat. & Lo. of North Island.	121 27	—	0 53	19 ½	28 1	distant 5 leagues.
10	26	3	121 2	121 22	—	—	—	—	N. E. l. br. fr. The island
11	27	7	121 6	121 18	—	—	19 ½	27 11	Botol bore N. 8° W. dis- tant 3 leagues. At 6 P. M.
12	27	43	120 30	121 15	—	1 37	16	27 11	Botol bore N. 47° W. dis- tant 1 league.
13	28	19	120 55	—	—	1 39	16	28 0	N. E. varying to the E. fr. g. fr.
14	28	36	121 9	—	—	—	15	28 0	E. S. E. very little wind, fair.
15	28	41	121 10	—	—	—	14	28 0	S. E. little wind, fair. At
16	29	27	121 16	—	—	—	15	27 11	noon the N. E. point of the
17	29	46	121 5	121 59	—	—	14	28 0	isle of Kumi, bore E. 14°
18	29	46	121 5	121 59	—	—	14	28 0	S. and the S. E. point bore
19	29	46	121 5	121 59	—	—	14	28 0	S. 28° E. distant two thirds
20	29	46	121 5	121 59	—	—	14	28 0	of a league.
21	29	46	121 5	121 59	—	—	14	28 0	S. E. fr. g. fair. At 8 A. M.
22	29	46	121 5	121 59	—	—	14	28 0	the island Hoapinsu, or
23	29	46	121 5	121 59	—	—	14	28 0	South Island, was in the
24	29	46	121 5	121 59	—	—	14	28 0	same bearing as North
25	29	46	121 5	121 59	—	—	14	28 0	island, N. 48° E. Our dis- tance from the former was
26	29	46	121 5	121 59	—	—	14	28 0	two thirds of a league, and
27	29	46	121 5	121 59	—	—	14	28 0	from the latter 6 leagues.
28	29	46	121 5	121 59	—	—	14	28 0	At noon, the island Hoap- insu bore S. 20° W. at
29	29	46	121 5	121 59	—	—	14	28 0	8 leagues distance, and the
30	29	46	121 5	121 59	—	—	14	28 0	North island bore S. 22°
31	29	46	121 5	121 59	—	—	14	28 0	E. at 4 leagues distance.
32	29	46	121 5	121 59	—	—	14	28 0	S. S. W. fr. g. fair.
33	29	46	121 5	121 59	—	—	14	28 0	S. S. W. varying to N. N. E. fr. g.
34	29	46	121 5	121 59	—	—	14	28 0	S. S. W. l. br. foggy. Sound-
35	29	46	121 5	121 59	—	—	14	28 0	ed in 55 and 50 fathom,
36	29	46	121 5	121 59	—	—	14	28 0	bottom sandy.
37	29	46	121 5	121 59	—	—	14	28 0	S. S. W. varying to the W.
38	29	46	121 5	121 59	—	—	14	28 0	N. W. l. br. fr. very foggy
39	29	46	121 5	121 59	—	—	14	28 0	w. founded in 55 and 45
40	29	46	121 5	121 59	—	—	14	28 0	fathom, bottom muddy.
41	29	46	121 5	121 59	—	—	14	28 0	S. S. E. very little wind, fog-
42	29	46	121 5	121 59	—	—	14	28 0	gy. At ½ past 6, P. M. an-
43	29	46	121 5	121 59	—	—	14	28 0	chored in 45 fathom, bot-
44	29	46	121 5	121 59	—	—	14	28 0	tom muddy.
45	29	46	121 5	121 59	—	—	14	28 0	W. S. W. l. br. foggy. Sound-
46	29	46	121 5	121 59	—	—	14	28 0	ed in 45 and 50 fathom,
47	29	46	121 5	121 59	—	—	14	28 0	bottom muddy. At 7 P. M.
48	29	46	121 5	121 59	—	—	14	28 0	anchored in 42 fathom,
49	29	46	121 5	121 59	—	—	14	28 0	bottom muddy.
50	29	46	121 5	121 59	—	—	14	28 0	S. S. W. very little wind,
51	29	46	121 5	121 59	—	—	14	28 0	still foggy. At 1 P. M.
52	29	46	121 5	121 59	—	—	14	28 0	set sail. At 10, P. M. an-
53	29	46	121 5	121 59	—	—	14	28 0	chored in 39 fathom, bot-
54	29	46	121 5	121 59	—	—	14	28 0	tom muddy, very th. fog.

May, 1787.	Lat. Nor.		Long. computed East.		Long. E. by the Time. Piece, No. 19.	Long. E. by the Diff. of the M. from the Sun.	Declina- tion of the Needle E.	Ther.	Barom.	Winds; State of the Sky; Remarks.	
	D.	M.	D.	M.	D.	M.	D.	P.	L.		
M 15	30	1	121	56	—	—	—	13 $\frac{1}{4}$	28 0	{ S. S. W. l. br. At 10 A. M. set fail, wd. at E. N. E. l. br. fair. E. N. E. l. br. misty. Sound- ed in from 45 to 24 fathom, bottom muddy. E. N. E. very little wd. foggy. Sounded in 36 and 40 fath. E. very little wind. Sounded in 36 and 25 fathom, bot- tom sandy. At $\frac{1}{2}$ past 2 A. M. anchored in 25 fathom. At 10 set fail; at noon, the wind at E. very dead, misty. At $\frac{1}{2}$ past 8 P. M. anchored in 32 fathom, bottom sandy. E. very little wind. Set fail at 6 A. M. wind at E. fr. g. misty. At $\frac{1}{2}$ past 6 P. M. anchored in 25 fathom, bot- tom sandy. At 6, set fail, l. airs at N. the current making 3 knots per hour.	
16	30	29	121	47	—	—	—	13 $\frac{1}{4}$	28 0		
17	30	47	121	46	—	—	—	12	28 0		
18	31	15	122	5	121	42	—	12 $\frac{1}{2}$	28 0	{ N. very little wind, foggy. N. N. W. fr. g. cl. Sounded in 36 and 44 fathom. W. S. W. l. br. At noon the W. point of isle Quelpaert bore N. 16° W. distant 4 leagues. I. N. 45°. S. W. little wind, fair. The most southerly islds. in sight bore N. 14°; the most west- erly N. 9° W. dist. 5 leag. N. l. br. fair; a calm sea. The coast of Corea, the most southerly in view, bore W. 35° N. the most northerly N. 27° E. at 3 leagues dist. E. N. E. little wind, fair. The coast of Corea the most northerly in view bore N. 20° E. Ran along this coast at 2 leagues distance. S. W. fr. g. fair. The most northerly point of Corea bore N. 20° W. distant 2 leagues. Sounded in 75 fa- thom. I. N. 44°. N. N. E. l. br. ft. a fog pre- vented us from seeing land. N. W. l. br. misty. The most northerly land of Corea in sight bore N. 52° W. distant 8 leagues. Veered ship, and left the Cape on the E. to explore the islands of Japan. At 3 o'clock P. M. saw an island bearing N. 15° E. dif. 15 leag. At noon the middle of this isl called isle Dagelet bore N. 17° E. distant 4 leagues. I. N. 45°.	
19	31	47	122	4	122	0	—	12 $\frac{1}{2}$	28 0		
20	32	8	122	10	—	—	—	11 $\frac{1}{2}$	27 11		
21	32	34	123	45	123	50	—	10 $\frac{1}{2}$	27 11		
22	32	59	124	16	124	21	124 6	11 $\frac{1}{2}$	28 0		
23	33	40	125	13	125	27	—	13 $\frac{1}{2}$	28 1		
24	34	23	126	7	126	27	—	13	27 10		
25	34	31	126	46	126	48	—	I 45	12 17 11		
26	35	29	127	25	127	35	127 12	12 $\frac{1}{2}$	27 14		
27	36	23	128	7	—	—	—	12	27 9		
28	36	41	128	17	128	11	—	I 54	11 27 11		

May, June, 1787.	Lat. Nor.	Long. computed East.	Long. E. by the Time-Piece, No. 19.	Long. E. by the Dif. of the M. from the Sun.	Declination of the Needle E.	Ther.	Barom.	Winds; State of the Sky; Remarks.
	D. M.	D. M.	D. M.	D. M.	D. M.	D.	P. L.	
M 29	37 9	128 42	128 59	—	2 11	11	28 0	S fr. g. fair.
	37 25	Lat. of S. point of the Isle Dagelet.	129 2	Long. of S. point of the Isle Dagelet.	—	—	—	
30	38 12	129 47	129 45	—	1 44	12	28 1	S. S. E. fr. g. fair. At 6 A. M. lost sight of Dagelet island.
31	38 22	130 34	130 41	—	—	11 1/2	28 1	S. S. E. fr. g. fair.
J. 1	38 12	131 27	131 35	—	—	12 1/2	28 1	S. S. E. l. br. fair.
2	37 38	132 10	132 13	—	0 36	13 1/2	28 0	S. varying to the N. E. l. br. fr.
3	37 17	132 34	132 32	—	0 20	12 1/2	28 1	N. E. varying to the S. E. l. br. foggy.
4	37 13	133 17	—	—	—	13	27 11	S. little wind, foggy.
5	38 7	133 32	133 38	—	—	12	28 0	S. l. br. foggy. I. N. 47°.
	37 40	133 33	134 49	—	—	13	28 0	S. W. fr. g. misty. At 10
	37 51	Lat. of the point of Jootsima.	135 20	Long. of the point of Jootsima.	—	—	—	saw the Japan islands; at noon the most northerly point bore E. 9° S. Ran
6	37 36	Lat. of an island E. of that point.	135 14	Long. of an island E. of that point.	—	—	—	along the coast of Japan, and passed to the E. of the
	37 18	Lat. of the most southerly point in view of Japan.	135 5	Long. of the most southerly point in view of Japan.	—	—	—	isl. Jootsima, which bore at 4 o'clock, E. and W. the point of the same name bore S. 66° E.
7	38 28	134 40	134 55	—	—	11	28 1	S. E. l. br. misty.
8	39 20	133 31	133 39	—	0 7	13 1/2	28 1	S. S. W. fresh g. foggy.
	40 4	132 4	—	—	0 35	10	27 7	S. S. W. fr. g. squally, foggy, with much rain.
10	40 49	131 55	131 40	130 54	0 3	10	27 7	S. W. little wind foggy. At 10, A. M. saw the North coast of Corea, in the N. At noon, were distant from it 12 leagues. I. N. 47°.
11	41 55	131 48	131 45	131 6	East. 1 6	9 1/2	27 7	S. S. W. varying to the W. fr. g. I. N. 48°.
12	42 35	132 15	132 23	—	0 19	7	27 8	N. E. l. br. foggy. At noon the most northerly land in sight bore N. 29° E. and the most westerly, N. 65° W. at 5 leagues distance.
13	42 49	132 43	132 41	—	2 33	8	28 0	S. W. little wind, fair. At noon, the land which bore N. was distant 2 leagues. Sounded at that dist. in 120 fath. bot. muddy I. N. 33°.
14	43 31	133 45	133 56	—	—	8	28 1	S. S. W. l. br. fair. Ran along the coast of Tartary, at the distance of 2 or 3 leagues.
15	43 53	134 21	—	—	—	9	28 0	S. S. E. l. br. foggy. Always in sight of land. I. N. 55°.
16	43 57	134 33	134 28	—	—	8	27 11	S. S. W. little wind foggy.
17	44 12	134 32	—	—	—	7 1/2	27 10	E. very little wind, foggy at intervals. I. N. 55°.
18	44 10	134 47	—	—	—	8	27 9	S. S. W. l. br. very thick fog.
19	44 30	134 52	135 13	—	—	8	27 10	S. S. W. fr. g. foggy.
20	44 44	134 59	135 21	135 5	—	7 1/2	27 9	N. E. little wind, fr. Table Mount bore N. 8° W. at 4 leagues distance, the nearest land.

June, July, 1787.	Latitude North.	Long. computed East.	Long. E. by the Time Piece, No. 19.	Long. E. by the Dif. of the M. from the Sun.	Declina- tion of the Needle E.	Ther.	Barom.	Winds; State of the Sky; Remarks.
	D. M.	D. M.	D. M.	D. M.	D. M.	D.	P. L.	
J. 21	44 46	135 35	—	—	—	8	27 10	S. S. W. very little wind, foggy at intervals. At noon the most northerly land in sight bore N. 20° E. and the nearest land bore N. 29° W.
22	45 1	135 48	135 42	—	—	8	27 10	N. E. fr. g. fair, very thick fog.
23	45 10	135 37	135 19	—	—	6	27 10	A calm, fair. The nearest land bore W. 20° N. at 3 leagues distance.
24	45 13	—	135 9	—	—	—	—	N. E. fr. g. fair. Anchor in the bay of Ternay.
25	—	—	—	—	—	8	28 0	A calm, rain in the day.
26	—	—	—	—	—	8	28 0	N. E. l. br. fair.
27	45 13	135 15	135 15	135 15	1 42	6	28 1	W. N. W: l. br. misty. Set sail at 8 A. M. the bay of Ternay bore N. 20° E. at 3 leagues distance.
28	46 8	136 28	136 24	—	1 10	7 ½	28 1	S. fr. fair. The nearest land bore N. 45° W. at 2 leagues distance. I. N. 58°.
29	46 51	136 54	137 34	—	—	8 ½	27 11	N. N. E. l. br. overcast.
30	47 20	137 33	137 37	—	—	8	28 0	W. S. W. l. br. foggy at intervals. The nearest land bore N. 55° W. at 3 leagues distance. At 7 P. M. anchored in 36 fathom, bottom muddy, distant 2 leagues from land; foggy.
Jul. 1	47 50	137 34	137 22	—	—	9	28 0	S. l. br.
2	47 52 At anch. in the bay of Sutiren.	137 22	—	—	—	—	28 0	At 10 A. M. set sail to approach the shore; wind at S. foggy. At noon anchored in 25 fathom, bottom sand and pebbles, distance from land ½ of a league.
3	47 51	137 25	—	—	—	8	28 0	N. E. l. br. At 8 A. M. the skiff was sent ashore, but could not land on account of the fog.
4	47 51	137 25	—	—	—	—	27 11	Set sail at 8 A. M. At noon, a calm, foggy; At 6 P. M. anchored in 44 fathom, bottom fine sand.
5	47 43	137 28	137 48	—	—	9	27 10	I. N. 62°.
6	48 0	138 20	139 19	—	2 54	10	27 7	Set sail at noon, and ran along the coast of Tartary; the wd. at N. N. E. l. br. foggy.
7	48 31	139 19	139 11	—	2 57 2 33	9 ½	27 8	S. fr. g. At 8 A. M. saw a very elevated peak or summit, and a low point which bore N. 8° E. distant 10 leagues. The nearest point in view of the continent of Tartary bore N. at 9 leagues distance; fair w. At noon the peak called Lamanon bore N. 66° E. at 12 leagues distance; the nearest land of Tartary in sight bore N. 45° W. I. N. 63°.

July, 1787.	Lat. Nor.		Long. computed E.	Long. E. by the Time- Piece, No. 10.	Long. E. by the Dif. of the M. from the Sun.	Declina- tion of the Needle East.	Ther.		Barom.	Winds; State of the Sky; Remarks.
	D.	M.	D. M.	D. M.	D. M.	D. M.	D.	P.	L.	
J. 8	48	23	139 32	139 41	—	—	10	27	7	A calm, misty w. At noon the N. point of the island of Segalien was in sight, and bore N. 35° E. the peak of Lamanon bore N. 44° E. and the most southerly land E. I. N. 63°.
9	48	15	139 38	139 54	—	—	9 $\frac{1}{2}$	27	8	S. S. W. l. br. very thick fog. Sounded in 16 fathoms, bottom muddy.
10	48	22	139 53	139 57	—	0 46	10 $\frac{1}{2}$	27	11	S. little wind, foggy.
11	48	4	140 10	140 16	139 20	1 0	10 $\frac{1}{2}$	27	11	S. S. W. fr. g. fair. At noon the entrance of a bay bore S. 33° E. distant 6 leagues; and the nearest point of land S. 83° E. at 4 leagues dist. I. N. 65°.
12	47	53	140 10	140 25	—	0 47	11	27	11	S. fr. g. fair. The peak of Lamanon bore N. 15° E. the entrance of a bay N. 73° E. at 3 leagues distance, and the nearest land S. 45° E. at 2 leagues distance.
13	47	49	Lat. of the anch. place.	140 29	Long. of the anch. place.	0 47	13	27	10	S. fr. g. fair. At 6 P. M. anchored in Baie de Langle near the island of Segalien, in 14 fathoms; the village bore E. 24° S. at the distance of $\frac{3}{4}$ of a league.
14	48	13	140 0	—	—	—	13 $\frac{4}{5}$	27	10	S. S. W. fr. g. At 5, A. M. sailed from Baie de Langle I. N. 63°.
15	48	27	139 29	—	—	—	11	27	10	S. fr. g. foggy.
16	48	22	139 9	—	—	—	12	27	11	S. S. W. fr. g. foggy.
17	48	20	138 47	—	—	—	10	27	10	S. fr. g. foggy.
18	48	12	138 42	—	—	—	11 $\frac{4}{5}$	27	10	S. S. E. l. br. foggy.
19	48	59	—	140 32	—	—	13	27	10	S. S. E. fr. g. overcast. The peak of Lamanon bore N. 65° E. at 4 leagues distance, and the nearest point of land N. 80° E. at 2 leagues distance. At 2 o'clock, anchored in Baie d'Estaing, in 20 fathoms, bottom muddy, dist. $\frac{3}{4}$ of a lea. from land.
20	49	26	140 32	140 32	140 16	—	14	27	10	S. l. br. At 4 A. M. set sail, the wind S. fr. g. misty. At 7 P. M. anchored in 39 fathoms, bottom fine sand, at 1 league distance from land. I. N. 64°.
21	49	53	140 31	—	—	—	13	27	10	S. l. br. misty. At 4 A. M. set sail; at noon the nearest land bore N. 11° E. distant 2 leagues.
22	50	31	140 26	140 30	—	—	14	27	10	S. l. br. misty. Sounded in from 80 to 45 f. off the Segalien. At noon the land bore E. 11° N. dist. 2 lea. At $\frac{1}{2}$ past 2, anch. in 42 fathoms, bottom m. at the dist. of $\frac{1}{2}$ l. from land.

July, Aug. 1787.	Latitude North.		Long. computed East.		Long. E. by the Time Piece, No. 19.	Long. E. by the Dif. of the M. from the Sun.	Declina- tion of the Needle East.	Ther.	Barom.	Winds; State of the Sky; Remarks.	
	D.	M.	D.	M.	D.	M.	D.	P.	L.		
J. 23	50	52	140	31	140	38	139	59	—	14 $\frac{1}{2}$ 27 11	S. almost a calm, foggy. At 5 A.M. set sail; a l. br. from the S. fair. Our anchoring place, called Ruiffeau des Saumons, bore S. 10° E. and the nearest land E. 22° S. at the distance of 1 $\frac{1}{2}$ league. Sounded in 39, 38, 35, 30, and 29 fathoms, bottom sandy, till 4 o'clock P. M. At 9, 24 fathoms. At $\frac{1}{2}$ past 9, anchored in 22 fathoms, bottom sandy.
24	51	29	140	26	140	29	—	0	55	14 28 0	S. l. br. At 3 A.M. set sail; at noon, the nearest land bore E. 20° N. at 4 leagues dist. and the most northerly land bore N. 6° E. Sounded in 15, 16, 18, 20, and 22 fathoms, as we drew near the middle of the channel of Tartary. At $\frac{1}{2}$ past 7 P. M. anchored in 24 fathoms, bottom muddy. I. N. 71°.
25	51	29	139	46	139	47	—	—	13	28 0	S. l. br. misty. At 4 A.M. set sail; foggy, l. br. course westerly. Sounded in 22, 20, and 19 fathoms, till $\frac{1}{2}$ past 9, when we came to anchor. At 2 o'clock, set sail, and stood to the N. E. running along the shore. At $\frac{1}{2}$ past 7, sounded in 19 fathoms, bottom sandy; anchored, same hour, at 2 leagues distance from land.
26	51	40	140	3	—	—	—	13	28 0		S. S. W. Sailed at 10 A.M. and stood off and on to get to the southward into deeper water.
27	51	32	140	8	—	—	—	13	28 0		S. S. W. heavy g. rather foggy. Sounded from 8 to 9, 12, 14, 16, 18, and 21 fathoms, bottom muddy. Sounded in 18, 16, 15, 14, 13, and 12 fathoms. At $\frac{1}{2}$ past 7, P. M. anchored in Baie de Castrics, in 11 fathoms, bottom muddy.
28	51	29	139	51	—	—	—	12	28 0		S. S. W. fr. g. fair. Shifted anchor, and anchored in 5 $\frac{1}{2}$ fathoms, bottom muddy.
29	51	29	139	41	—	—	—	12	27 11		S. very little wind, foggy.
30	—	—	—	—	—	—	—	13	27 10		E. S. E. very little wind,
31	—	—	—	—	—	—	—	13	27 11		S. S. E. fair. l. br.
A. 1	—	—	—	—	—	—	1	50	—	27 11	S. very little wind, fair.
2	—	—	—	—	—	—	—	—	—	—	E. N. E. very little wind, varying to the S. E.

Aug. 1787.	Lat. Nor.	Long. computed East.	Long. E. by the Time Piece, No. 19.	Long. E. by the Dif. of the Mn. from the Sun.	Declina- tion of the Needle E.	Ther.	Barom.	Winds; State of the Sky; Remarks.
	D. M.	D. M.	D. M.	D. M.	D. M.	D.	P. L.	
A. 3	51 19	140 14	140 7	—	1 7	13 $\frac{1}{2}$	28 0	S. S. W. varying to the S. S. E. very little wind. At 4 P. M. set sail. At 8 P. M. Cape Clostercam bore S. 18° W. Sounded in 12 and 17 fathoms. At noon, the nearest land bore N. 35° E.
4	50 48	139 27	139 27	—	1 7	14 $\frac{1}{2}$	28 0	S. S. W. varying to the S. S. E. very little wind, fair. Soundings increased as we steered southerly, to 45 fathoms. At noon the land bore W. 11° N. at 3 leag. distance.
5	50 35	139 52	140 16	—	—	10	27 11	S. fr. g. foggy w.
6	50 18	139 53	139 50	—	—	14	27 7	S. fr. g. milly.
7	50 6	140 7	—	—	1 8	13	27 6	S. S. W. fr. g. heavy sea, misty.
8	49 13	139 41	139 28	—	—	15	27 10	S. S. W. fr. g. varying to the N. by W. and E. N. E. very little wind, fair. Saw the coast of Tartary bearing S. 55° W. and N. 38° E. the peak of Lamanon bore S. 48° E.
9	48 25	140 55	140 1	138 53	1 50	13 $\frac{1}{2}$	27 9	N. heavy g. fair. Peak of Lamanon bore N. 48° E. the most southerly point in view bore S. 66° E.
10	46 45	140 24	140 11	138 37	1 27	13 $\frac{1}{2}$	27 10	N. heavy g. fair, a large sea. The middle of isle Monneron bore S. 29° W. and the peak of Bernizet N. 32° E. At half past 7, P. M. anchored in 40 fathoms, bottom sandy, distant 2 leagues from the coast; the peak of Langle bore S. 20° W. isle Monneron N. 55° W. and Cape Crillon E. 18° S.
11	45 57	140 32	140 25	—	1 23	15	27 11	N. heavy g. fair. At 4 A. M. set sail, with a l. w. at N. At $\frac{1}{2}$ past 11, a calm. Anchored 2 leagues from point Crillon bearing N. 71° W. the peak of Langle bore S. 30° W. At $\frac{1}{2}$ past 12, at noon, shifted anchor, when Cape Crillon bore S. 83° E. and the peak of Langle, S. 29° W.
12	45 40	140 48	—	—	—	11	28 0	A calm, fair. At 8 A. M. failed and passed the strait which separates Jesso from Oku-Jesso; wind at N. E. l. br. misty.
13	45 21	140 3	141 13	—	1 37	10 $\frac{1}{2}$	28 0	S. almost a calm, fair. Cape Aniva bore N. 30° E. and the peak of Langle, S. 81° W.
14	47 27	141 43	—	—	2 11	11 $\frac{1}{2}$	28 0	S. E. l. br. fair. At noon Cape Aniva bore N. 9° E. I. N. 57°.

Aug. Sept. 1787.	Lat. Nor.		Longitude computed East.		Long. E. by the Time. Piece, No. 19.	Lon. E. by the Dif. o the M. from the Sun.	Declina- tion of the Needle E.	Ther.		Barom.	Winds; State of the Sky; Remarks.	
	D.	M.	D.	M.	D.	M.	D.	P.	L.			
A. 15	46	9	142	44	142	57	—	3	c	12 $\frac{1}{2}$	28 1	E. S. E. l. br. fair. Cape Aniva bore S. 84° W.
16	46	20	143	48	—	—	—	12	$\frac{1}{2}$	28 1	E. S. E. fr. g. misty, foggy. I. N. 54°.	
17	46	9	144	18	144	11	—	12	$\frac{1}{2}$	27 11	E. S. E. varying to the N. E. misty.	
18	45	57	144	52	144	58	—	12		27 11	N. varying to the S. S. E. by E. very little wind, foggy at intervals. I. N. 58°.	
19	46	19	146	7	146	21	—	3	32	13	27 9	S. fr. g. misty. Saw Staten Land, or Island, which bore S. 7° E.
20	46	27	148	6	148	9	—	5	14 5 50	13	27 10	S. W. fr. g. cl. Ran along Staten Island.
21	47	10	148	50	148	56	—	10	$\frac{4}{3}$	27 11	S. E. very little wind, foggy. I. N. 57°.	
22	47	14	148	47	—	—	5	4	12	28 0	S. l. br. varying to the W. S. W. foggy.	
23	47	12	148	49	148	9	—	13		28 1	S. S. W. varying to the S. little wind, very thick fog.	
24	47	22	149	24	149	15	—	5	27	10 $\frac{4}{3}$	27 11	S. l. br. foggy. One of the islands, Four Brothers, bore S. 2° W. I. N. 52°.
25	47	28	149	47	—	—	—	10		27 11	S. S. E. l. br. foggy.	
26	47	20	149	48	—	—	—	11		27 10	S. S. E. varying to the N and at noon to the W. very little wind, foggy.	
27	47	11	150	3	150	3	—	9	$\frac{1}{4}$	27 11	W. S. W. l. br. At $\frac{1}{2}$ past 8, the fog cleared up; saw the isl. Marakina, bearing from N. 67° E. to S. 6° E.	
28	47	7	149	44	149	44	—	4	44 4 49	9 $\frac{1}{4}$	28 0	S. W. varying to the N. by W. and N. N. E. At noon, almost a calm, overcast: the N. E. point of the island Marakina bore N. 73° E. the S. W. point bore S. 37° E. and one of the islands, Four Brothers, S. 37° W.
29	46	19	149	59	—	—	—	7		28 1	E. varying to the N. E. l. br. overcast. Proceeding thro' the strait, of La Bouffole, at 4 A. M. the S. point of Marakina, bore N. 30° E. distant five leagues; foggy.	
30	45	57	150	48	151	10	—	8		28 1	W. S. W. l. br. overcast	
31	46	15	152	18	—	—	—	10	$\frac{4}{3}$	28 1	Do. very little wind, foggy.	
S. 1	47	3	153	58	—	—	—	12		28 1	S. S. W. heavy g. foggy.	
2	48	29	155	38	155	32	—	9	$\frac{1}{4}$	27 11	W. heavy g. foggy.	
3	49	16	156	24	156	23	—	6	3	9	28 2	W. N. W. very little wind, foggy.
4	50	23	156	25	156	52	156 23	6	4	10	28 2	S. W. heavy g. cl.
5	50	56	157	17	157	40	157 15	6	53	9 $\frac{4}{3}$	27 11	S. W. fr. g. foggy. At 3 P. M. saw land, part of the peninsula of Kamtschatka.
6	52	26	157	56	157	36	157 14	8	$\frac{4}{3}$	27 9	W. fr. g. cl. At noon, the volcano bore N. 38° W.	

ROUND THE WORLD.

29

Sept. 1787.	Lat. Nor.	Long. computed East.	Long. E. by the Time Piece, No. 19.	Long. E. by the Dif. of the Mn. from the Sun.	Declina. tion of the Needle E.	Ther.	Barom.	Winds, State of the Sky; Remarks.
	D. M.	D. M.	D. M.	D. M.	D. M.	D.	P. L.	
S. 7	52 47	156 54	156 57	156 42	—	7 $\frac{4}{3}$	27 10	{ N. W. l. br. fair. The entrance of the bay of Avatscha bore N. 50° W. and the volcano N. 5° W. At 7, P. M. anchored in the bay of Avatscha, in 7 fathoms, bottom muddy; the harbour of St. Peter and St. Paul bore N. 44° E. and the volcano, N. 13° E.
8	53 1	—	156 42	—	—	—	—	{ A calm; at one P. M. a breeze at S. E.

Oct. Nov. 1787	Long. E. by the Time Piece, No. 19.	Corrected	Long. true E.	Latitude North.	Barom.	Ther.	Declina- tion of the Needle E.	Winds; State of the Sky; Remarks.
	D. M.	D. M.	D. M.	D. M.	P. L.	D.	D. M.	
O. 1	157 0	—	157 0	51 18	27 5	5 $\frac{1}{4}$	—	W.S.W. fr. g. fair.
2	157 43	—	157 43	49 44	27 10	4 $\frac{1}{2}$	—	Do.
3	157 46	—	157 46	47 57	27 9	5 $\frac{3}{4}$	—	W. fr. g. fair.
4	158 4	—	158 4	46 27	27 8	5 $\frac{3}{4}$	—	N. N. E. heavy g. fair!
5	158 32	0 2	158 50	44 42	27 10	5 $\frac{1}{2}$	—	N. W. squally, rain. I. N. 43°.
6	159 40	0 4	159 36	43 16	28 3	8	10 54	W. S. W. do.
7	—	0 6	—	—	28 4	9 $\frac{3}{4}$	—	S. do.
8	161 55	0 8	161 47	43 17	28 0	12	—	S. W. do. overcast.
9	162 40	0 10	162 50	41 23	28 1	11 $\frac{1}{2}$	—	N. W. do.
10	162 41	0 13	162 28	40 26	28 2	11	12 33	S. S. E. do. I. N. 36°.
11	163 11	0 16	162 55	39 41	27 10	11 $\frac{1}{2}$	—	S. E. l. br. overcast.
12	163 35	0 19	163 16	38 46	28 2	12	13 12	N. N. E. l. br. fair.
13	164 38	0 22	164 18	38 46	28 1	12 $\frac{3}{4}$	11 1	S. little wind, overcast.
14	164 39	0 25	164 14	38 5	28 4	14	—	S. S. W. fr. g. fair. I. N. 33°.
15	166 19	0 28	165 51	37 23	28 2	16 $\frac{1}{2}$	—	Do.
16	168 5	0 31	167 34	37 37	28 1	16 $\frac{3}{4}$	12 42	S. W. do.
17	170 51	0 34	170 17	37 28	28 0	15	—	{ N. N. W. heavy gale rain. I. N. 29°.
18	172 10	0 37	171 33	37 28	28 2	14	—	E. l. br. fair.
19	173 46	0 40	173 6	37 25	27 10	14 $\frac{3}{4}$	—	N. N. W. fr. g. fair.
20	176 15	0 42	175 33	37 15	28 4	12	—	W. do. overcast.
21	178 25	0 45	177 40	37 4	27 9	10 $\frac{1}{4}$	—	N. W. heavy g. do.
22	179 40	0 48	179 32	37 19	27 10	11	—	S. E. little wind, ft.
23	179 48	0 50	179 22	36 6	28 2	11	—	N. W. fr. g. fair.
24	178 20	0 50	179 11	35 45	27 11	16	11 50	S. do. overcast.
25	177 28	0 52	178 20	34 56	28 1	16 $\frac{1}{4}$	12 0	Do.
26	—	—	—	—	28 0	16 $\frac{3}{4}$	—	W. S. W. heavy g. rain.
27	175 59	0 53	176 53	32 37	28 0	17	—	W. l. br. fair.
28	175 15	0 54	176 9	31 31	28 1	18	—	N. N. W. heavy g.
29	175 22	0 54	176 16	29 37	28 4	17	—	N. E. fr. g. fair.
30	175 47	0 54	176 41	27 33	28 3	18 $\frac{1}{2}$	—	E. do. overcast.
31	176 18	0 51	177 3	—	28 1	20	—	S. gusts of wind, do.
N. 1	174 43	0 55	175 38	26 27	28 1	21	—	S. W. little wind, rain.
2	174 42	0 55	175 37	26 21	28 2	18	12 8	A calm, fair.
3	174 53	0 55	175 42	25 13	28 2	20 $\frac{1}{2}$	12 9	E. l. br. overcast.
4	175 3	0 56	175 59	23 40	28 3	20	—	E. N. E. fresh g. do.
5	175 14	0 56	176 10	21 39	28 2	20	—	E. heavy g. do.
6	—	—	—	—	28 2	20	—	E. N. E do. cl.
7	175 5	0 57	176 2	17 54	28 1	20 $\frac{1}{4}$	11 30	Do.
8	175 6	0 57	176 3	16 16	28 2	20	—	Do.
9	175 7	0 57	176 4	14 49	28 1	20 $\frac{1}{2}$	—	E. do;
10	175 8	0 57	176 6	12 56	28 1	21	—	Do.
11	—	—	—	—	28 0	21	11 15	Do.
12	—	—	—	—	28 0	20	—	E. S. E. do. rain;
13	—	—	—	—	28 0	21	10 35	Do.
14	174 28	0 59	175 27	7 38	27 11	21	—	E. N. E. fresh g. fr. I. N. 10°.
15	—	—	—	—	27 11	20 $\frac{4}{3}$	9 7	Do. fr. g. rain.
16	—	—	—	4 31	28 0	21	—	E. S. E. do.
17	174 9	1 0	175 9	3 39	28 0	21	—	Do. I. N. 4°.
18	174 45	1 1	175 56	3 9	28 0	20 $\frac{1}{2}$	8 30	Do.
19	175 20	1 2	176 22	2 4	28 0	21	9 13	Do. fair.
20	175 27	1 2	176 29	0 54	28 0	20 $\frac{1}{2}$	9 37	E. N. E. l. br. fair.
21	175 32	1 3	176 36	South. 0 34	—	—	10 6	Do.
22	175 7	1 4	176 10	1 48	28 0	20 $\frac{1}{2}$	10 44	Do.
23	174 46	1 5	175 50	2 47	28 0	20 $\frac{1}{2}$	9 44	N. E. fr. g. fair.
24	174 10	1 6	175 16	3 28	28 0	21	—	N. l. br. fair.
25	173 19	1 7	174 26	3 47	28 0	22	—	{ N. N. W. little wind, fair. I. N. 6°.
26	172 45	1 7	173 53	3 52	27 11	20 $\frac{3}{4}$	9 9	W. N. W. do.
27	172 33	1 8	173 41	4 17	27 11	21 $\frac{1}{4}$	10 7	N. N. E. do.

Nor. Dec. 1787. Jan. 1788.	Long. W. by the Time Piece. No. 19.	Corrected	Longit. true Weat.	Latitude South.	Barom.	Ther.	Declination of the Needle E.	Winds; State of the Sky; Remarks.
	D. M.	D. M.	D. M.	D. M.	P. L.	D.	D. M.	
N. 28	171 52	1 10	173 2	5 25	28 0	22	—	N. fr. g. fair.
29	171 14	1 11	172 24	6 16	28 0	21 1/2	—	N. N. W. do.
30	—	1 12	—	—	28 0	19	—	W. ft.
D. 1	169 26	1 13	170 39	8 59	27 11	20	—	N. W. heavy g. rain.
2	168 54	1 14	170 9	10 26	27 10	20 3/4	—	W. S. W. do. ft.
3	168 51	1 16	170 7	11 34	27 11	19 3/4	9 52	W. l. br. fair.
4	168 41	1 17	169 58	12 10	27 11	21	8 43	W. N. W. a calm.
5	169 9	1 19	170 27	12 42	28 0	21 1/4	8 55	E. S. E. l. br. fair.
6	169 27	1 19	170 47	13 19	28 0	21	8 45	Do.
7	170 6	1 21	171 27	14 7	28 0	20 1/2	9 42	Do.
8	170 56	1 22	172 19	13 59	28 0	20	9 31	E. l. br. fair.
9	171 6	1 24	172 30	14 13	28 0	21	—	E. little wind. I. N. 18°.
10	—	—	—	—	28 0	21	—	E. l. br. fair.
11	171 20	1 27	172 47	14 17	28 0	20 1/2	—	E. N. E. little wind, fair.
12	171 21	1 28	172 49	14 12	28 0	21	9 8	N. E. very little wind, fair.
13	171 28	1 30	172 58	14 7	27 11	21 1/2	8 27	E. S. E. a calm, do.
14	171 53	1 31	173 24	13 52	27 11	21 1/4	—	E. N. E. l. br. fair.
15	172 16	1 33	173 49	13 33	28 0	21	—	A calm.
16	172 43	1 34	174 18	13 20	—	—	—	Do.
17	173 14	1 36	174 49	13 24	28 0	21	—	E. N. E. l. br. fair.
18	173 49	1 37	175 26	13 59	28 0	20 3/4	—	E. S. E. do.
19	174 8	1 39	175 47	14 22	28 0	21	9 13	Do. very little wind.
20	174 33	1 41	176 14	14 48	28 0	21	—	Do.
21	174 46	1 43	176 29	15 26	28 0	21	10 53	N. E. little wind, fair.
22	174 36	1 44	176 21	—	27 11	21 1/2	—	N. N. E. fr. g. fair.
23	174 30	1 46	176 16	16 3	27 11	21	—	N. N. W. gusts of wind, rain.
24	173 34	1 48	175 22	17 12	27 11	20 1/4	11 38	W. N. W. fr. g.
25	173 16	1 50	175 6	18 11	27 11	19	—	N. N. W. l. br. fair.
26	173 30	1 52	175 22	—	28 4	19 1/2	—	Do.
27	173 52	1 54	175 46	18 35	28 0	19	—	N. cl.
28	174 17	1 56	176 13	18 25	27 11	19	—	Do. rain. I. N. 29°.
29	174 55	1 58	176 53	18 43	27 10	18 3/4	—	N. N. E. l. br. fair.
30	175 26	2 0	177 26	19 55	27 11	19 3/4	11 30	N. N. W. fr. g.
31	175 37	2 2	177 39	21 4	27 11	19 1/2	10 57	N. N. E. l. br.
1788.								
J. 1	175 43	2 4	177 47	21 39	27 11	19 1/2	11 38	{ S. S. W. very little wind.
2	175 43	2 6	177 48	22 26	27 11	19 1/2	10 50	{ I. N. 33°.
3	175 55	2 8	178 4	22 36	27 11	19	10 27	W. S. W. l. br.
4	176 35	2 10	178 45	22 20	28 0	18 3/4	10 5	{ S. S. W. very little wind,
5	177 38	2 12	179 50	22 41	28 0	19 1/2	—	{ fair. I. N. 34°.
6	—	—	—	23 21	28 0	19	—	Do. l. br. fair.
	East.		East.				—	N. E. do.
7	—	—	—	—	27 11	17 4/3	—	Do.
8	176 49	2 18	174 31	25 0	28 0	18	—	E. N. E. fr. g. I. N. 37°.
9	174 41	2 20	172 21	25 51	28 0	18	—	Do.
10	172 46	2 22	170 24	26 42	28 0	18	—	Do. I. N. 39°.
11	171 51	2 24	169 28	28 0	27 11	15	—	N. E. fr. g.
12	169 47	2 25	167 22	28 57	27 8	16 1/2	—	{ N. N. E. fr. g. overcast.
13	168 32	2 27	166 5	29 1	27 10	16	—	{ I. N. 47°.
14	167 11	2 28	164 43	29 7	27 11	16	—	W. l. br. fair. I. N. 52°.
15	165 6	2 30	162 37	29 26	28 1	16 1/2	—	S. E. fr. g. fair.
16	163 11	2 31	160 40	30 26	28 1	17 1/4	—	E. S. E. do.
17	161 9	2 32	158 38	31 28	28 2	18	9 5	E. N. E. do. I. N. 50°.
18	159 22	2 33	156 49	32 17	28 1	18	9 20	Do.
19	157 55	2 33	155 23	32 48	28 2	18	10 23	N. E. fr. g. fair. I. N. 54°.
20	155 51	2 34	153 18	33 17	28 3	18	10 7	N. N. E. fr. g. fair.
21	154 38	2 34	152 4	34 2	28 3	18	9 32	N. E. do. I. N. 55°.
							9 42	Do.
								E. N. E. l. br. fair.

Jan. 1788.	LONG. E. by the Time- Piece, No. 19.		Corrected		Long. true E.		Latitude South.		Barom.		Ther.	Declina- tion of the Needle E.		Winds; State of the sky; Remarks.
	D.	M.	D.	M.	D.	M.	D.	M.	P.	L.	D.	D.	M.	
22	153	60	2	35	151	25	54	9	28	3	18	11	23	A calm, fair: I. N. 57°.
23	152	40	2	35	150	5	33	43	28	3	18	11	22	S. E. fr g. fair.
24	152	44	2	35	150	8	34	9	28	1	17	—	—	N. N. W. fr. g.

N. B. By a mean taken between many series of distances of the moon from the sun, the error of the time piece, No. 19, was ascertained by the observed longitudes; we afterwards interpolated the variations which the diurnal corrections should undergo, in order to deduce from them the true longitudes.

Here follow the results produced by the observations of distances, or series reduced to a fixed epoch. D. M. S.

Oct. 6.	0	4	0
Nov. 2.	0	55	0
13.	1	1	8
Dec. 4.	1	16	30
13.	1	37	20
Jan. 4.	2	8	30
16.	2	31	0

According to this series we deduced the true diurnal longitudes, which served us for the true longitude of our arrival at New Holland.

TABLES,

SHEWING THE

COURSE of L'ASTROLABE,

DURING THE YEARS

1785, 1786, and 1787,

FROM THE TIME OF THE SHIP'S SAILING FROM EUROPE.
TILL ITS ARRIVAL IN KAMTSCHATKA.

Aug.
Sept.
1785

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Aug. Sept. 1785.	Lat. North.	Long. computed West.	Long. W. by the Time- Piece, No. 18.	Long. W. by the Dif. of the M. from the Sun.	Declina- tion of the Needle W.	Ther- interi- or ob- s'd. at noon.	Barom. of Naira, observed at noon till Aug. 15, excl. & from do. at 9 in the mor. & 3 in af.	Winds; State of the Sky; Remarks.	
	D. M.	D. M.	D. M.	D. M.	D. M.	D.	P. L. P. L.		
A. 7	41 18	14 10	—	—	—	16 9	28 3	—	N.E. moderate br. fair.
8	38 55	15 41	15 12	—	—	17	Do.	—	{ N. E. and N. N. E. fr. g. misty.
9	36 44	16 34	15 31	—	—	19	28 2	—	N.E. moderate br. fair.
10	34 46	17 4	16 10	15 11	—	19	28 3	—	Do.
11	33 6	17 45	16 39	15 17	—	19	28 2	—	Do
12	32 8	19 20	18 13	—	—	19	28 3	—	{ N. N. E. and N. little wind, misty.
13	32 42	—	19 11	—	18 18	20	Do.	—	N. E. little wind, fair.
14	—	—	—	—	—	21	28 4	—	{ N. E. varying to the S. E. by E. a calm, fair.
15	—	—	19 32	—	—	21	28 3	28 3	{ N. E. varying to the E. N. E. and to the S. W. by S. moder- ate br. misty.
16	—	—	—	—	—	21	Do.	Do.	N.E. moderate br. fair.
17	31 25	19 7	18 4	—	17 40	20	28 4	28 4	N.N.E. mod. br.
18	30 17	18 9	—	—	—	20	28 5	28 5	N. E. l. br. fair.
19	28 30	18 29	—	—	—	21	28 4	28 3	{ N. N. E. moderate br. fair.
20	—	—	—	—	—	19	28 3	Do.	N.E. moderate br. rain.
21	—	—	—	—	—	21	Do.	Do.	N. E. little wind, rain.
22	—	—	—	—	—	22	Do.	Do.	{ N. varying to the N. E. little wind, hazy.
23	—	—	—	—	—	22	28 4	Do.	{ N. E. varying to the E. N. E. moderate br. fair.
24	—	—	—	—	16 45	22	Do.	Do.	N.E. moderate br. fair.
25	—	—	—	—	—	21	28 3	Do.	N. E. l. br. fair.
26	—	—	—	—	16 58	22	Do.	Do.	N.E. very little w. fair.
27	—	—	—	18 18	14 32	22	28 4	28 4	{ E. varying to the E. N. E. fr. g. fair. I. N. 58°.
28	—	—	—	—	14 56	22	Do.	Do.	{ E. N. E. varying to the N. E. fr. g. fair.
29	—	—	—	—	16 7	22	Do.	28 3	N. E. little wind, fair.
30	—	—	—	—	17 5	23	28 3	28 2	N.N.E. little wind, fair.
31	27 6	18 52	18 46	—	19 12	22	Do.	Do.	N.E. moderate br. fair.
S. 1	25 9	19 21	19 44	—	15 35	23	28 2	Do.	{ N. E. varying to the E. l. br. fair.
2	23 54	19 48	—	—	—	22	28 3	Do.	{ N. E. and E. N. E. fr. g. fair.
3	22 11	20 38	20 42	—	14 57 13 38	22	28 2	Do.	N. E. fr. g. foggy.
4	21 20	21 9	21 17	—	—	23	Do.	Do.	{ N. E. varying to the N. W. by N. little wind, misty.
5	19 33	21 56	22 14	—	—	22	Do.	Do.	{ N. E. varying to the N. N. E. moderate br. misty.
6	17 37	22 26	22 24	—	12 20	23	Do.	28 1	{ N. E. moderate br. hazy and stormy.
7	16 19	22 20	22 19	—	12 31	23	Do.	Do.	N. E. l. br. fair.
8	15 44	22 13	—	—	—	25	Do.	Do.	{ N. E. varying to the E. S. E. by E. ft.
9	14 57	22 18	22 19	—	11 52 11 40	25	Do.	28 2	{ S. S. E. varying to the N. N. W. by E. al- most a calm, ft.
10	14 11	22 14	22 11	22 10	11 3	25	Do.	Do.	{ N. varying to the E. S. E. by E. l. br. fair. I. N. 32°.

Sept. Oct. 1785.	Lat. Nor.		Long. computed West.		Long. W. by the Time Piece, No. 18.		Long. W. by the Dif. of the M. from the Sun.		Declina- tion of the Needle, W.		Ther- momi- eter ob- served at Noon.	Barometer of Nairne, observed at 9 in the morn- ing and 3 in the afternoon.		Winds; State of the Sky; Remarks.	
	D.	M.	D.	M.	D.	M.	D.	M.	D.	M.	D.	At 9. P. L.	At 3. P. L.		
S. 11	13	57	22	27	—	—	11	31	27	28	3	28	2	{ E. varying to the S. little wind, ft.	
12	13	11	22	20	22	3	—	—	24	Do.	Do.			{ E. S. E. varying to the W. N. W. by S. little wind, ft.	
13	12	12	22	24	21	57	22	5	10	59	22	Do.	Do.	{ S. varying to the N. N. E. by W. l. br. mifty.	
14	11	4	22	24	—	—	10	40	25	28	2	28	1	{ N. N. E. varying to the N. N. W. by N. l. br. fair.	
15	10	8	22	24	21	31	—	10	45	25	Do.	28	2	{ N. N. W. and N. lit- tle wind, misty.	
16	9	10	21	36	19	37	—	—	25	Do.	28	1		{ N. N. W. varying o the S. W. by W. l. br. misty.	
17	8	31	20	46	18	49	—	11	0	24	Do.	28	2	{ W. S. W. and S. S. W. moderate br. rain.	
18	7	39	20	11	18	42	—	10	58	24	Do.	Do.		{ S. W. varying to the S. S. W. l. br. fr.	
19	7	13	20	6	—	—	—	—	25	28	3	Do.		{ W. S. W. varying to the N. by W. little wind, fair.	
20	6	10	19	58	18	24	—	—	24	28	2	Do.		{ N. varying to the W. l. br. misty.	
21	5	13	19	29	17	43	—	—	23	Do.	Do.			{ N. W. varying to the S. S. W. by W. l. br. mifty.	
22	4	37	18	34	16	42	—	—	23	28	3	Do.		{ W. S. W. and S. W. moderate br. misty.	
23	3	43	18	2	16	11	16	11	—	23	Do.	Do.		{ N. varying to the W. S. W. by W. l. br. mifty.	
24	2	46	17	23	15	0	—	—	24	Do.	Do.			{ W. S. W. varying to the S. W. little wind, fair.	
25	2	20	16	33	14	4	—	—	24	Do.	Do.			{ S. W. varying to the S. S. E. by S. little w. misty. I. N. 9°.	
26	1	41	17	30	15	15	15	7	11	31	23	Do.	Do.	{ S. and S. S. E. mode- rate breeze, rain.	
27	1	24	18	12	—	—	—	—	23	28	2	Do.		{ S. S. W. and S. S. E. do.	
28	0	55	19	8	17	1	17	43	—	23	Do.	Do.		{ S. S. E. and S. E. fr. g. rain.	
29	0	11	20	1	18	2	—	—	22	28	3	Do.		{ S. E. moderate br. mist.	
30	South.		0	41	20	39	18	29	—	9	36	22	Do.	Do.	{ S. E. l. br. fair. In. N. 8°.
O. 1	1	40	21	16	19	0	—	—	9	55	22	Do.	Do.		{ S. E. do. I. N. 7°.
2	2	52	21	49	19	41	—	—	9	40	22	Do.	Do.		{ S. E. varying to the E. S. E. l. br. fair. I. N. 6°.
3	4	22	22	18	20	25	—	—	8	40	22	Do.	Do.		{ S. E. and E. S. E. do. I. N. 4°.
4	5	42	22	48	20	50	—	—	8	32	22	Do.	Do.		{ E. S. E. rain, I. N. 2°.
5	6	51	23	10	21	22	—	—	7	23	21	Do.	Do.		{ S. E. varying to the E. S. E. l. br. gusts of wind, rain. I. N. 2°.
6	8	11	23	37	22	7	—	—	8	13	22	Do.	Do.		{ E. and E. S. E. l. br. fair. I. N. 3°.

Oct. Nov. 1785	Latitude South.		Long. computed Walt.		Long. W. by the Time Piece, No. 18.		Long. W. by the Dif. of the M. from the Sun.		Declina- tion of the Needle West.		Ther- interi- or, ob- s'd at Noon.		Barometer of Nairne observed at 9 in the morn- ing and 3 in the afternoon.		Winds; State of the Sky; Remarks.		
	D.	M.	D.	M.	D.	M.	D.	M.	D.	M.	D.		At 9. P. L.	At 3. P. L.			
O. 7	9	34	24	6	22	42	23	21	6	40	22		28 3	28 2	E. l. br. misty. <i>I. N.</i> 7°.		
8	11	4	24	29	23	19	24	4	—	22			Do.	Do.	E. S. E. and E. mo- derate br. fair.		
9	12	19	25	0	23	52	24	28	5	49	21		Do.	Do.	E. and E. S. E. l. br. rain. <i>I. N.</i> 11°.		
10	13	37	25	26	24	3	—		4	43	21		Do.	Do.	E. and E. S. E. mode- rate br. gusts of w. rain.		
11	14	38	25	44	—		26	9	4	43	20		Do.	28 3	E. S. E. and S. E. moderate br. do. <i>I.</i> <i>N.</i> 15°.		
12	15	52	26	14	25	21	26	60	4	30	20		Do.	Do.	E. S. E. and E. l. br. gusts of wind, rain.		
13	17	7	26	58	26	0	—		3	30	19	28 4	Do.		E. and E. S. E. mo- derate br. fr.		
14	18	42	27	43	26	49	—		2	33	19		Do.	Do.	E. and E. N. E. mo- derate breeze, fair. <i>I. N.</i> 23°.		
15	20	28	28	28	26	49	—		1	38	21	28 3	Do.		E. and E. N. E. mo- derate br. fair.		
16	20	43	30	19	28	53	—		East. 1	0	21		Do.	28 2	N. E. varying to the N. moderate br. fr.		
17	20	42	31	11	29	51	—		1	28	22	28 1	28 1		N. varying to the N. W. moderate br. misty. <i>I. N.</i> 26°.		
18	20	42	31	11	29	54	—		1	50	22	28 2	28 2		N. and N. N. W. l. br. fr.		
19	21	7	32	29	—		—		1	45	20	28 3	Do.		N. varying to the N. W. and to the S. by W. l. br. misty. <i>I. N.</i> 28°.		
20	20	44	33	44	—		—				20	28 2	Do.		S. varying to the E. S. E. moderate br. rain.		
21	20	49	34	40	34	0	—		2	24	19		Do.	Do.	S. E. do.		
22	20	30	36	10	34	26	—		2	24	—	28 3	28 3		S. S. E. and S. mode- rate br. fr.		
23	20	30	37	13	35	43	37 36		2	16	19	28 4	Do.		S. varying the S. S. E. l. br. fair.		
24	21	26	38	0	—		—		4	36	19	28 3	28 2		S. E. varying to the E. S. E. moderate br. fair.		
25	23	28	39	51	—		—		—		19	27 11	27 9		E. and E. N. E. mo- derate br. misty.		
26	24	14	40	50	39	3	41 3		—		20	27 9	27 11		E. N. E. varying to the W. N. W. by S. moderate br. fr.		
27	25	5	41	43	39	36	41 44		7	6	20	28 0	28 0		W. N. W. & N. l. br. fr.		
28	24	47	42	0	39	34	41 41		7	9	20	28 2	28 2		W. varying to the S. W. lit le wind, misty.		
29	24	47	42	56	—		—		7	14	20		Do.	Do.	S. varying to the E. N. E. little w. fair.		
30	25	25	44	29	—		—		—		21	28 1	27 11		N. varying to the E. S. E. little wind, foggy. <i>I. N.</i> 36°.		
31	25	42	45	10	—		—		—		21		Do.	28 0	Do.		
N. 1	26	50	46	35	—		—		9	5	20		Do.	28 1		S. E. & E. S. E. l. br. r.	
2	27	39	47	38	45	33	—		9	4	20	28 0	27 11		E. varying to the N. W. l. br. fair.		
3	27	30	49	5	—		—		—		19	28 2	28 2		N. N. W. var. to the S. S. E. by S. l. br. fair.		

Nov. Dec. 1785.	Latitude South.		Long. computed West.		Long. W. by the Time Piece, No. 18.		Long. W. by the Dif. of the M. from the Sun.		Declina- tion of the Needle E.		Ther- momi- ter, ob- served at noon.	Barometer of Nairne observed at 9 in the morn- ing and 3 in the afternoon.		Winds; State of the Sky; Remarks.
	D.	M.	D.	M.	D.	M.	D.	M.	D.	M.	D.	At 9. P. L.	At 3. P. L.	
N. 4	27	9	49	5	—	—	—	—	—	—	19	28 1	28 1	S. E. varying to the S. little wind, rain.
5	27	0	49	39	—	—	—	—	9 55	—	19	28 2	28 2	S. S. E. and S. l. br. r.
6	27	18	—	—	—	—	—	—	—	—	19	Do.	Do.	E. S. E. varying to the N. l. br. ft.
7	—	—	—	—	47	16	—	—	—	—	20	—	—	S. and S. E. moderate br. misty.
8	—	—	—	—	—	—	—	—	—	—	19	28 2	28 2	S. E. varying to the E. N. E. little wind, misty.
9	—	—	—	—	—	—	—	—	—	—	19	—	—	N. E. l. br. misty.
10	—	—	—	—	—	—	—	—	—	—	19	—	—	N. varying to the N. N. E. moderate br. rain.
11	—	—	—	—	—	—	—	—	—	—	20	28 1	—	E. varying to the E. N. E. moderate br. rain.
12	—	—	—	—	—	—	—	—	—	—	20	Do.	28 0	S. E. and E. S. E. l. br. m.
13	—	—	—	—	—	—	—	—	—	—	20	—	—	S. varying to the E. a calm, do.
14	—	—	—	—	—	—	—	—	—	—	20	—	28 0	N. E. and E. N. E. l. br. fair.
15	—	—	—	—	—	—	—	—	—	—	21	—	28 1	N. N. E. varying to the S. W. by E. very little wind, rain.
16	—	—	—	—	—	—	—	—	—	—	—	—	—	S. E. and E. l. br. fair.
17	—	—	—	—	—	—	—	—	—	—	20	28 2	28 2	E. varying to the N. E. moderate br. ft. I. N. 40°.
18	—	—	—	—	—	—	—	—	—	—	21	Do.	28 1	N. varying to the N. N. W. little wind, ft. I. N. 38°.
19	—	—	—	—	—	—	—	—	—	—	21	28 0	Do.	E. N. E. varying to the S. W. by E. a calm, fair. I. N. 40°.
20	27	39	49	19	—	—	—	—	9 19	—	20	28 2	Do.	S. varying to the S. S. W. moderate br. fr.
21	28	3	48	37	48	22	47	52	—	—	19	Do.	Do.	S. varying to the S. l. br. fair.
22	28	52	48	10	—	—	—	—	8 10	—	19	28 1	28 0	S. varying to the N. E. moderate br. mif.
23	30	59	46	39	46	34	46	37	—	—	20	Do.	Do.	N. E. and E. N. E. moderate br. misty.
24	31	37	46	11	46	5	46	6	—	—	20	28 2	28 2	N. E. varying to the S. S. W. by N. l. br. foggy.
25	32	37	45	39	45	35	45	43	—	—	18	Do.	Do.	E. S. E. varying to the N. N. E. by E. l. br. foggy.
26	33	39	44	45	—	—	—	—	10 24	—	18	Do.	28 1	N. E. and E. N. E. lit- tle wind, misty.
27	35	0	44	11	—	—	—	—	—	—	18	27 11	27 8	E. N. E. and E. l. br. r.
28	35	23	44	40	44	20	—	—	9 57	—	17	Do.	28 0	E. varying to the S. fr. g. rain.
29	35	43	43	57	—	—	—	—	9 40	—	17	28 2	28 3	S. S. W. varying to the W. moderate br. misty.
30	36	27	43	8	42	1	—	—	—	—	18	28 3	Do.	W. varying to the W. N. W. l. b. fair.
D. 1	37	41	41	31	39	57	—	—	—	—	17	Do.	28 2	W. N. W. l. br. misty. I. N. 50°.

Dec. 1785.	Lat. South.		Long. computed West.		Long. W. by the Time. No. 18.		Long. W. by the Dif. of the M. from the Sun.		Declina- tion of the Needle E.		Ther- mometer, or, ob- served at noon.	Barometer of Nassau observed at 9 in the morn- ing and 3 in the afternoon.		Winds; State of the Sky; Remarks.												
												At 9. P. L.	At 3. P. L.													
D.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	
	38	39	40	37	38	29	—	—	18	28	1	28	1													
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Dec. 1785. Jan. 1786.	Latitude South.	Long. computed West.	Long. W. by the Time Piece, No. 18.	Long. W. by the Dif. of the M. from the Sun.	Declina- tion of the Needle East.	Ther- interi- or, ob- s'd at noon.	Barometer of Naine observed at 9 in the morn- ing and 3 in the afternoon.		Winds; State of the Sky; Remarks.
	D. M.	D. M.	D. M.	D. M.	D. M.	D.	At 9. P. L.	At 3. P. L.	
D. 27	42 20	50 36	48 23	—	14 8	13	27 9	27 9	E. N. E. varying to the S. E. by S. l. br. r.
28	42 1	51 36	49 3	—	—	13	27 10	27 8	S. S. W. and N. W. by W. little wind, fair.
29	41 46	52 41	—	—	15 8	13	27 11	28 0	N. N. W. varying to the S. S. W. by W. gusts of wind, rain.
30	42 11	53 38	50 33	—	—	14	27 10	27 9	S. varying to the N. W. by W. moderate br. misty.
31	42 22	54 41	—	—	—	15	27 8	27 10	N. W. varying to the S. S. W. by W. mo- derate br. gusts of wind, rain.
1786									
J. 1	41 33	55 16	52 33	—	15 58	14	27 9	27 11	S. S. W. and S. fr. g. gusts of wind, rain.
2	41 31	56 25	53 17	—	—	15	28 2	28 1	S. S. W. varying to the S. E. and to the N. by W. little wind, fair.
3	42 37	57 58	54 28	54 31	16 44	16	27 10	27 11	N. varying to the W. S. W. by W. mo- derate br. misty.
4	42 45	60 35	55 47	56 0	—	16	28 0	Do.	W. varying to the S. E. by N. l. br.
5	43 34	60 35	56 49	57 31	—	16	27 10	27 9	N. N. E. varying to the S. E. by W. little W. ft.
6	44 53	61 19	57 24	—	17 29	15	27 9	27 4	E. N. E. varying to the W. S. W. by W. partial gusts of wind, rain.
7	44 53	61 56	58 26	—	18 20	14	27 9	27 8	S. W. varying to the N. N. W. by W. fr. g. misty.
8	45 32	62 51	59 26	60 13	19 0	13	27 8	27 9	W. S. W. varying to the S. moderate br. gusts of wind, misty.
9	46 47	64 1	—	—	19 30	12	27 5	27 4	W. S. W. and W. N. W. moderate br. cl.
10	47 47	64 27	61 1	—	20 3	11	Do.	27 6	N. W. and W. S. W. l. br. clear.
11	48 14	64 40	61 38	—	20 24	11	27 7	27 8	W. and S. S. W. lit- tle wind, fair.
12	47 58	65 24	62 30	—	20 25	11	27 8	27 9	W. S. W. and S. lit- tle wind, fair.
13	46 50	66 33	63 37	—	—	12	28 2	28 2	S. W. moderate br. gusts of wind, cl.
14	47 52	67 58	64 47	—	20 50	11	27 9	27 10	W. S. W. and N. W. moderate br. rain.
15	48 57	68 58	65 51	—	21 41	12	27 8	27 8	W. varying to the N. N. E. by N. and to the W. S. W. by W. l. br. fair.
16	49 45	69 7	66 10	—	21 58	11	27 11	28 0	W. varying to the S. W. by W. little wind, fair.
17	50 4	69 55	67 7	—	22 11	10	28 2	28 3	W. N. W. varying to the S. S. E. by S. l. br. cl.

Jan. Feb. 1788.	Lat. South.		Longitude computed West.		Long. W. by the Time- Piece, No. 18.		Lon. W. by the Dif. of the M. from the Sun.		Declina- tion of the Needle E.		Ther.	Barometer of Nairne observed at 9 in the morn- ing and 3 in the afternoon.				Winds; State of the Sky; Remarks.
												At 9	At 3.	P.	L.	
J. 18	49	58	70	45	68	1	—	22	52	10		28	3	28	4	S. S. E. varying to the S. W. by S. l. br. fair.
19	50	16	71	39	68	56	—	23	27	11		28	4	28	3	S. varying to the N. E. by E. little wind, cl.
20	50	58	72	58	70	29	68	34	23	18	12	28	2	28	1	N. E. and E. N. E. l. br. fair. <i>I. N.</i> 64°.
21	51	34	73	17	—	—	69	17	22	55	12	Do.	28	2		N. N. W. and S. S. E. by E. little wind, do.
22	52	22	72	55	70	49	69	32	22	47	13	Do.	28	f		S. E. varying to the W. N. W. by E. and to the N. cl.
23	53	41	68	32	69	43	68	40	—	—	11	28	3	Do.		N. W. varying to the S. W. moderate br. misty.
24	54	33	67	10	67	58	66	50	—	—	11	27	11	27	10	N. W. and N. N. W. moderate br. cl. <i>I. N.</i> 68°.
25	56	17	68	8	67	47	—	—	—	—	11	27	8	27	8	N. N. W. and S. W. by W. l. br. cl. rain.
26	57	8	68	35	67	51	—	—	—	—	10	27	7	27	5	S. W. and W. mo- derate br. misty.
27	57	57	69	32	67	45	—	—	—	—	9	27	4	27	3	W. S. W. and W. gusts of wind, rain.
28	57	52	71	43	70	19	—	—	—	—	9	27	6	27	9	W. and W. N. W. varying to the S. E. by S. l. br. cl.
29	58	18	73	13	70	60	—	—	—	—	9	27	5	27	4	S. S. E. and W. S. W. by S. moderate br. rain.
30	57	53	73	47	71	37	—	—	—	—	9	27	7	27	7	W. and W. S. W. gusts of wind, misty.
31	58	38	74	13	—	—	—	—	—	—	9	27	8	27	6	W. S. W. and W. N. W. little wind, rain
F. 1	57	59	75	10	73	4	—	—	—	—	9	27	8	27	8	W. and W. S. W. l. br. rather foggy.
2	58	22	76	41	74	22	—	27	3	9		27	8	27	7	W. and W. N. W. little wind, cl. rain. <i>I. N.</i> 70°.
3	58	52	78	53	76	33	—	—	—	—	9	27	11	26	7	W. N. W. and N. N. W. moderate br. rain.
4	58	48	79	20	76	27	—	27	11	9		27	1	27	2	N. varying to the W. S. W. fr. g. gusts of wind, rain.
5	59	38	80	28	77	20	—	—	—	—	8	27	3	27	1	W. S. W. and N. W. by W. gusts of wind.
6	60	37	82	1	79	1	—	—	—	—	8	27	0	27	1	W. and W. S. W. moderate br. rain.
7	59	20	83	43	80	53	—	—	—	—	8	27	3	27	1	S. W. and S. S. W. gusts of wind, rain.
8	58	40	85	2	81	32	—	—	—	—	7	27	1	27	3	S. W. a calm. After- wards E. N. E. and E. S. E. cl.
9	57	15	88	12	84	32	—	—	—	—	7	27	4	27	4	E. S. E. varying to the S. S. W. gusts of wind, cl. <i>I. N.</i> 10°.
10	56	0	89	9	85	26	—	—	—	—	7	27	4	27	6	S. S. E. varying to the S. W. by S. partial gusts of wind, over- cast, rain.

Feb. Mar. 1786.	Latitude South.		Long. computed West.		Long. W. by the Time Piece, No. 18.		Long. W. by the Dif. of the Ma. from the Sun.		Declina- tion of the Needle E.		Ther- momi- ter, ob- served, at noon.		Barometer of Nairne, observed at 9 in the morn- ing and 3 in the afternoon.		Winds; State of the sky; Remarks.		
	D.	M.	D.	M.	D.	M.	D.	M.	D.	M.	D.		At 9. P. L.	At 3. P. L.			
F. 11	53	47	89	44	86	20	—	—	—	—	8		27	9	27	9	{ S. S. W. and W. S. W. moderate br. cl.
12	53	8	89	46	86	21	—	—	—	—	9		27	6	27	6	{ S. W. varying to the N. W. by W. l. br. foggy.
13	51	17	89	22	86	7	—	—	—	—	9		27	8	27	7	{ S. W. and W. S. W. partial gusts of wind, rather foggy.
14	49	58	88	59	86	1	—	—	—	—	9		27	10	27	10	{ W. S. W. and W. N. W. l. br. rain.
15	48	3	88	21	85	15	—	—	—	—	10		27	8	27	7	{ W. N. W. and W. S. W. gusts of wind, rain.
16	45	24	87	39	84	39	—	—	—	—	10		27	11	28	1	{ W. and S. W. fr. g. rain.
17	43	27	86	41	83	28	—	—	—	—	11		28	1	28	2	{ S. S. W. and W. N. W. by W. moderate br. rather foggy.
18	42	19	86	3	82	41	—	—	—	—	13		Do.	28	0		{ W. and S. W. l. br. foggy. I. N. 62°.
19	41	4	85	2	81	29	—	—	—	—	14		Do.	28	2		{ S. S. W. and W. N. W. l. br. hazy.
20	40	1	83	39	80	3	78	39	17	29	15		28	28	3		{ S. S. W. and W. N. W. moderate br. cl.
21	39	5	81	49	78	17	77	9	15	39	15		Do.	28	2		{ S. W. varying to the S. S. E. by S. l. br. misty.
22	37	51	80	41	77	28	76	28	15	0	15		28	2	28	2	{ S. S. E. varying to the S. W. l. br. fair.
23	36	42	79	46	76	31	75	45	14	49	15		28	1	28	1	{ S. and S. S. W. moderate br. fair
24	—	—	—	—	—	—	—	—	—	—	14		28	2	28	2	{ S. S. W. varying to the S. S. E. by S. l. br. cl.
25	—	—	—	—	—	—	—	—	—	—	15		Do.	—	—		{ S. varying to the S. W. little wind, fair.
26	—	—	—	—	—	—	—	—	—	—	15		28	1	—		{ S. W. and S. l. br. fair.
27	—	—	—	—	—	—	—	—	—	—	16		Do.	—	—		{ S. and S. S. W. a calm, foggy.
28	—	—	—	—	—	—	—	—	—	—	16		Do.	28	1		{ S. and S. W. a calm, fair.
M. 1	—	—	—	—	—	—	—	—	—	—	16		Do.	Do.	Do.		{ S. and S. S. W. moderate br. fair.
2	—	—	—	—	—	—	—	—	—	—	16		28	3	28	3	{ S. S. W. a calm, fair.
3	—	—	—	—	—	—	—	—	—	—	16		Do.	—	—		{ Do.
4	—	—	—	—	—	—	—	—	—	—	15		—	28	2		{ S. S. W. and S. W. little wind, fair I. N. 56°
5	—	—	—	—	—	—	—	—	—	—	15		28	2	28	1	{ S. S. W. moderate br. fair.
6	—	—	—	—	—	—	—	—	—	—	15		—	—	—		{ S. W. little wind, foggy.
7	—	—	—	—	—	—	—	—	—	—	16		28	1	—		{ S. S. W. and S. W. l. br. fair.
8	—	—	—	—	—	—	—	—	—	—	17		—	—	—		{ Do.
9	—	—	—	—	—	—	—	—	—	—	16		—	—	—		{ S. W. and W. S. W. l. br. foggy.
10	—	—	—	—	—	—	—	—	—	—	15		—	—	—		{ Do.
11	—	—	—	—	—	—	—	—	15	20	15		—	—	—		{ S. S. W. and W. S. W. fair.
12	—	—	—	—	—	—	—	—	—	—	15		—	—	—		{ S. and S. S. W. little wind, cl.
13	—	—	—	—	—	—	—	—	—	—	15		—	—	—		{ Do.
14	—	—	—	—	—	—	—	—	—	—	15		28	1	28	1	{ N. and N. N. E. little wind, foggy.

March & April, 1786.	Latitude South.		Long. computed West.		Long. W. by the Time- Piece, No. 18.		Long. W. by the Dif. of the Mn. from the sun.		Declina- tion of the Needle E.		Ther- interi- or, ob- s'd. at noon.	Barometer of Nain's, observed at 9 in the morn- ing and 3 in the afternoon.		Winds; State of the Sky; Remarks.
	D.	M.	D.	M.	D.	M.	D.	M.	D.	M.		At 9. P. L.	At 3. P. L.	
M. 15	—	—	—	—	—	—	—	—	—	14	—	—	—	N. and N. N. E. lit- tle wind, misty.
16	—	—	—	—	—	—	—	—	—	Do.	—	—	—	N. and N. W. mo- derate br. rain.
17	—	—	—	—	—	—	—	—	—	Do.	—	—	—	S. and S. S. E. little wind, foggy.
18	36	38	75	58	—	—	—	—	15	20	15	28	2 28 2	S. W. and S. S. E. a calm, cl.
19	35	29	77	9	—	—	—	—	15	13	Do.	28	1 28 3	W. S. W. varying to the S. S. E. l. br. cl.
20	33	40	79	19	79	6	—	—	14	0	Do.	28	3 28 4	S. W. and S. S. W fr. g. misty.
21	32	33	81	39	81	42	—	—	—	16	28	5 28 5	—	S. varying to the S. S. E. fr. g. cl.
22	31	29	83	52	—	—	—	—	—	17	Do.	28	4	S. and S. E. fr. g. cl.
23	30	31	86	8	85	45	85	32	10	40	Do.	28	4 28 3	S. varying to the E. S. E. mod. br. misty.
24	29	48	87	56	87	28	87	8	9	33	18	28	3 28 2	Do. rather foggy.
25	29	12	89	50	89	1	88	54	9	22	Do.	Do.	28 3	E. S. E. and S. E. moderate br. cl.
26	28	35	91	33	90	37	90	24	7	55	Do.	28	4 28 4	Do.
27	27	53	94	5	92	52	—	—	7	56	Do.	28	5 28 5	S. E. and E. l. br. fair.
28	27	33	96	41	95	13	—	—	7	52	19	Do.	28 4	E. and E. S. E. fr. g. gusts of wind, rain.
29	27	17	98	47	97	5	—	—	7	56	Do.	28	4 Do.	Do. cl.
30	27	9	100	37	99	1	—	—	7	14	Do.	Do.	28 3	Do. J. N. 53°.
31	26	59	102	44	101	1	—	—	7	11	Do.	Do.	28 4	S. E. and S. S. E. l. br. fair. J. N. 53°.
A. 1	27	6	104	49	103	3	—	—	7	57	20	Do.	Do.	E. S. E. moderate br. cl.
2	27	7	107	15	105	14	—	—	5	28	Do.	28	5 Do.	E. S. E. and E. N. E. partial gusts of wind, misty.
3	27	7	109	23	107	19	107	8	—	21	Do.	Do.	—	E. varying to the N. E. moderate br. cl.
4	27	11	111	14	109	0	—	—	5	9	Do.	28	3 28 2	N. E. and N. N. W. by N. l. br. rain.
5	27	4	111	45	109	20	—	—	—	—	Do.	28	2 Do.	N. N. W. and N. W. little wind, cl.
6	27	3	111	54	109	12	—	—	—	22	28	1 28 1	—	N. N. W. and W. N. W. fr. g. cl.
7	26	57	112	36	—	—	—	—	—	21	28	2 28 2	—	W. N. W. varying to the E. S. E. by S. little wind, rain. J. N. 52°.
8	27	8	113	40	111	1	—	—	—	—	Do.	28	1 27 11	S. E. varying to the N. E. by E. l. br. cl. rain.
9	27	10	114	25	111	55	—	—	—	—	Do.	Do.	28 1	N. E. varying to the S. E. by E. little wind, cl.
10	27	9	—	—	—	—	—	—	—	—	Do.	—	—	S. E. and E. S. E. moderate br. fair.
11	26	26	111	58	—	—	—	—	3	54	20	28	4 28 3	S. S. E. and S. E. lit- tle wind, fair.
12	25	5	111	56	111	54	—	—	4	0	Do.	—	28 4	S. and S. E. l. br. cl.
13	23	19	111	48	111	54	—	—	4	2	Do.	28	4 28 3	S. E. and S. S. E. l. br. fair. J. N. 54°.
14	21	50	111	37	111	57	—	—	4	0	21	28	3 Do.	S. E. and S. S. E. l. br. fair.
15	20	39	111	31	112	2	—	—	4	39	Do.	—	—	Do. S. E. and E. cl.

April, May, 1786.	Latitude South.		Longit. computed West.		Long. W. by the Time Piece, No. 18.		Long. W. by the Dif. of the M. from the Sun.		Declina- tion of the Needle E.		Ther- interi- or, ob- s'd at noon.	Barometer of Naince, observed at 9 in the morn- ing, and 3 in the afternoon.		Winds; State of the Sky; Remarks.		
	D.	M.	D.	M.	D.	M.	D.	M.	D.	M.	D.	At 9. P. L.	At 3. P. L.			
A. 16	19	5	111	40	112	15	—	4	38	21	28	4	28	3	{ E. and E. N. E. gusts of wind, cl.	
17	17	38	112	4	112	54	—	4	19	22	Do.	Do.			{ N. E. and E. N. E. mo- derate br. misty.	
18	16	3	112	22	113	9	—	4	10	21	28	3	28	2	{ E. N. E. and N. E. l. br. cl.	
19	14	12	112	27	113	19	—	4	8	22	Do.	28	1		{ N. E. and E. mode- rate br. misty.	
20	12	14	112	34	113	31	113	9	4	19	22	28	2	28	2	{ E. N. E. and E. S. E. moderate br. cl.
21	10	11	112	39	113	51	113	36	3	58	23	28	3	Do.	Do.	
22	8	23	112	58	114	17	113	42	4	6	23	28	2	28	1	{ E. and E. S. E. mo- derate br. fair.
23	6	41	113	16	114	59	114	31	3	50	24	Do.	Do.			{ E. S. E. and S. E. l. br. fair.
24	5	29	113	41	115	45	—	3	39	23	Do.	28	2			{ S. E. and S. S. E. l. br. fair.
25	4	20	114	25	116	54	—	2	54	24	28	3	Do.			{ E. S. E. and S. E. do. I. N. 36°.
26	3	20	115	10	118	8	—	2	4	24	Do.	28	1			{ Do. I. N. 33°.
27	2	15	115	45	118	40	—	2	50	24	28	2	28	2		{ S. E. and E. S. E. l. br. cl.
28	1	0	116	22	119	6	—	3	47	24	Do.	Do.				{ Do.
North.																
29	0	12	116	47	119	10	—	3	50	23	Do.	28	1			{ E. S. E. and S. S. E do. I. N. 27°.
30	1	37	117	18	119	29	—	4	8	23	Do.	Do.				{ Do fair.
M. 1	2	55	118	2	120	18	119	39	4	28	23	28	1	Do.		{ S. E. and S. S. E. l. br. cl.
2	4	3	118	43	121	4	121	13	2	47	24	Do.	Do.			{ Do. misty.
3	5	10	119	10	121	33	121	46	2	39	24	28	2	Do.		{ E. S. E. and S. E. lit- tle wind, cl.
4	5	46	119	23	121	25	—	3	25	24	Do.	Do.				{ S. S. E. and E. S. E. little wind, fair.
5	6	10	119	37	—	—	—	3	40	25	Do.	Do.				{ S. E. varying to the N. by E. a calm, misty.
6	7	4	120	21	122	12	122	32	3	14	25	Do.	Do.			{ E. and E. N. E. gusts of wind, cl.
7	8	17	121	9	123	21	—	3	49	25	Do.	Do.				{ N. E. varying to the S. E. by E. l. br. cl.
8	9	25	121	43	124	11	—	3	30	25	Do.	Do.				{ E. and N. E. little wind, cl.
9	10	44	122	53	125	57	—	4	4	23	Do.	Do.				{ N. E. and N. N. E. l. br. cl.
10	11	51	124	8	127	24	—	3	57	22	Do.	28	2			{ Do.
11	13	32	125	15	128	46	—	—	—	22	Do.	Do.				{ Do.
12	14	46	126	18	130	8	—	3	53	21	28	3	Do.			{ Do. misty.
13	16	28	127	33	131	37	—	—	—	20	Do.	Do.				{ Do. moderate br.
14	18	9	128	51	133	1	—	—	—	20	Do.	Do.				{ N. E. and E. N. E. fr. g. cl.
15	19	14	130	23	134	46	—	5	51	19	Do.	28	3			{ Do.
16	19	49	131	57	136	10	—	8	17	19	Do.	Do.				{ Do.
17	20	1	133	23	137	33	—	8	20	19	Do.	Do.				{ N. E. and E. l. br. misty.
18	20	0	135	9	139	21	—	8	18	19	28	4	Do.			{ E. and E. N. E. do.
19	20	1	137	3	141	19	—	8	11	20	28	3	Do.			{ Do. cl.
20	19	59	138	50	142	58	141	50	8	27	20	Do.	28	2		{ E. and E. N. E. l. br. cl.
21	19	55	140	29	144	49	143	56	—	20	Do.	28	3			{ Do.
22	20	5	142	29	146	43	146	19	8	45	20	Do.	28	3		{ E. l. br. fair.
23	20	4	144	16	148	33	148	25	—	20	28	4	28	4		{ Do. rather cloudy. I. N. 10°.
24	20	45	146	16	150	40	—	8	8	20	Do.	Do.				{ Do. I. N. 5°.
25	20	57	148	20	152	52	—	9	33	20	Do.	28	3			{ Do. misty.

May, June, 1786.	Latitude North.		Long. computed West.		Long. W. by the Time Piece, No. 18.		Long. W. by the Dif. of the M. from the Sun.		Declina- tion of the Needle E.		Ther- interi- or, ob- s'd at noon.	Barometer of Nairne, observed at 9 in the morn- ing and 3 in the afternoon.		Winds; State of the Sky; Remarks.			
	D.	M.	D.	M.	D.	M.	D.	M.	D.	M.	D.	At 9. P. L.	At 3. P. L.				
M 26	20	59	150	14	154	49	—	9	27	20	28	4	28	3	E. and E. N. E. mo- derate br. cl.		
27	21	0	152	5	156	37	—	9	28	20	28	3	Do.	Do.	Do. rain.		
28	20	49	153	18	157	44	—	9	15	21	Do.	Do.	Do.	Do.	E. and E. S. E. 1 br. cl. E. N. E. and E. S. E. 1. br. guffs of wind, rain.		
29	20	33	154	27	158	43	—	—	—	21	Do.	Do.	Do.	Do.	E. N. E. moderate br fair.		
30	—	—	—	—	—	—	—	—	—	21	Do.	Do.	Do.	Do.	E. S. E. and E. N. E. little wind, fair.		
31	21	15	159	24	160	7	—	8	32	22	28	4	28	3	E. N. E. and N. E. moderate br. cl.		
J. 1	22	55	159	59	160	38	160	16	9	34	22	28	5	28	4	E. N. E. and E. mo- derate br. guffs of wind, rain.	
2	24	48	160	1	160	48	160	34	9	27	22	28	6	28	5	E. and E. N. E. 1 br. cl. N. E. and E. N. E. 1. br. cl.	
3	26	29	160	47	161	23	161	22	11	0	24	28	4	28	6	E. N. E. varying to the S. E. by E. 1. br. fair.	
4	28	3	160	30	161	28	161	20	10	57	21	28	3	28	5	E. S. E. varying to the S. S. W. by S. moderate br. cl.	
5	29	11	160	29	161	33	—	11	30	20	Do.	28	3	Do.	Do.	S. S. W. varying to the S. W. 1. br. cl. rain.	
6	30	47	160	5	160	57	—	11	44	20	Do.	28	2	Do.	Do.	S. W. and S. S. E. by S. moderate breeze, foggy.	
7	32	17	159	43	160	16	—	12	8	20	Do.	28	3	Do.	Do.	S. S. W. varying to the N. W. by W. 1. br. rain.	
8	33	55	159	13	160	6	—	12	40	20	Do.	Do.	Do.	Do.	Do.	N. varying to the S. S. E. by W. little wind, foggy.	
9	34	58	158	52	159	13	—	—	—	19	28	5	28	6	Do.	Do.	S. varying to the S. W. and to the E. N. E. by E. 1. br. foggy.
10	35	47	158	32	—	—	—	—	—	19	Do.	28	4	Do.	Do.	Do.	E. N. E. and S. E. varying to the S. W. by S. little wind, foggy.
11	36	59	158	13	—	—	—	—	—	16	28	4	Do.	Do.	Do.	Do.	S. and S. S. W. 1. br. foggy.
12	38	1	157	52	158	1	—	—	—	16	Do.	—	—	—	Do.	Do.	S. W. and W. S. W. 1. br. rain.
13	39	13	157	19	—	—	—	—	—	16	Do.	28	4	Do.	Do.	Do.	W. and N. W. guffs of wind, rain.
14	41	6	156	18	155	58	—	—	—	15	28	3	28	2	Do.	Do.	W. N. W. and W. S. W. moderate br. cl.
15	43	12	155	13	155	17	—	—	—	13	28	1	28	1	Do.	Do.	W. and S. W. mode- rate br. misty.
16	45	1	153	25	153	23	—	—	—	12	Do.	Do.	Do.	Do.	Do.	Do.	W. N. W. and W. S. W. 1. br. cl.
17	46	46	151	43	151	36	—	—	—	11	Do.	28	0	Do.	Do.	Do.	S. W. and W. S. W. little wind, misty.
18	48	22	150	39	150	4	—	—	—	11	27	10	27	10	Do.	Do.	W. varying to the S. S. E. by S. 1. br. ra- ther foggy.
19	50	6	149	34	149	1	—	—	—	10	Do.	Do.	Do.	Do.	Do.	Do.	
20	51	53	148	31	147	50	147	50	23	32	9	27	9	Do.	Do.	Do.	
21	53	20	147	41	147	5	—	24	58	10	27	11	27	11	Do.	Do.	

June, July, 1780.	Lat. Nor.		Long. computed W.		Long. W. by the Time- Piece, No. 18.		Long. W. by the Dif. of the M. from the Sun.		Declina- tion of the Needle E.		Ther- momi- eter, ob- served, at noon.		Barometer of Mairne, observed at 9 in the morn- ing and 3 in the afternoon.		Winds; State of the Sky; Remarks.		
	D.	M.	D.	M.	D.	M.	D.	M.	D.	M.	D.	At 9. P. L.	At 3. P. L.				
J. 22	55	43	145	38	145	45	—	23	25	9	28	2	28	2	S. S. E. and E. S. E. moderate br. cl. Do. misty. E. S. E. and E. N. E. l. br. rain. S. and S.W. varying to the S. E. by S. foggy. S. E. varying to the W. N. W. by S. little wind, foggy. W. N. W. varying to the E. N. E. by N. little wind, cloudy. E. and E. N. E. l. br. rain. E. varying to the S. W. by S. little wind, cl. rain. S. and S. S. W. little wind, rain. S. varying to the W. S. W. and to the W. N. W. little wind, foggy. W. S. W. and S. W. little wind, cl. W. and W. N. W. little wind, fair. W. N. W. and N. W. l. br. fair. W. N. W. and W. moderate br. cl. E. and E. N. E. little wind, foggy. N. E. and N. little wind, fair. N. E. and E. N. E. a calm, foggy. S. W. little wind, cl. E. N. E. varying to the S. by E. a calm, foggy. N. E. and E. little wind, foggy. N. E. and E. N. E. little wind, foggy. N. E. varying to the S. W. by E. l. br. rather foggy. N. E. varying to the S. W. by E. l. br. cl. W. varying to the N. E. by N. little wind, misty. W. moderate br. cl. S. W. varying to the W. N. W. by W. l. br. foggy. E. and E. N. E. mo- derate br. cl. rain.		
23	57	46	143	55	144	11	—	—	—	10	Do.	Do.					
24	59	23	141	57	143	36	—	—	—	10	27	11	27	11			
25	59	29	141	22	142	39	—	31	30	11	28	1	28	2			
26	59	42	141	8	142	43	—	31	24	11	27	10	27	10			
27	59	49	142	19	142	44	—	31	0	11	27	8	27	8			
28	59	20	142	36	142	46	—	—	—	10	27	10	27	10			
29	59	20	141	59	—	—	—	—	—	11	27	11	27	11			
30	58	54	141	37	141	46	140	57	25	30	10	28	1	28		2	
Il. 1	59	7	140	56	141	26	—	—	—	10	28	3	28	4			
2	58	38	140	16	140	16	—	25	38	11	28	2	—	—			
3	58	43	139	58	139	59	139	55	—	10	27	10	—	—			
4	—	—	—	—	—	—	—	—	—	10	—	—	—	—			
5	—	—	—	—	—	—	—	—	—	11	—	—	—	—			
6	—	—	—	—	—	—	—	—	—	11	—	—	—	—			
7	—	—	—	—	—	—	—	—	—	11	—	—	—	—			
8	—	—	—	—	—	—	—	—	—	11	—	—	—	—			
9	—	—	—	—	—	—	—	—	—	11	—	—	—	—			
10	—	—	—	—	—	—	—	—	—	11	—	—	—	—			
11	—	—	—	—	—	—	—	—	—	11	—	—	—	—			
12	—	—	—	—	—	—	—	—	—	10	—	—	—	—			
13	—	—	—	—	—	—	—	—	—	11	—	—	—	—			
14	—	—	—	—	—	—	—	27	0	11	—	—	—	—			
15	—	—	—	—	—	—	—	—	—	11	—	—	—	—			
16	—	—	—	—	—	—	—	—	—	11	—	—	—	—			
17	—	—	—	—	—	—	—	—	—	11	—	—	—	—			
18	—	—	—	—	—	—	—	—	—	11	—	—	—	—			

July, Aug. 1786.	Lat. Nor.		Long. computed West.		Long. W. by the Time Piece, No. 18.		Long. W. by the Dif. of the M. from the Sun.		Declina- tion of the Needle, E.		Ther. inter- obler- ved at Noon.		Barometer of Nairney, observed at 9 in the morn- ing and 3 in the afternoon.		Winds; State of the Sky; Remarks.
	D.	M.	D.	M.	D.	M.	D.	M.	D.	M.	D.		At 9. P. L.	At 3. L. P.	
J. 19	—	—	—	—	—	—	—	—	—	—	10	—	—	—	E. N. E. and E. S. E. do.
20	—	—	—	—	—	—	—	—	26	55	10	—	—	—	{ N. E. varying to the S. E. by E. l. br. rather foggy.
21	—	—	—	—	—	—	—	—	—	—	10	—	—	—	{ W. N. W. and W. little wind, cl. rain
22	—	—	—	—	—	—	—	—	—	—	10	—	—	—	{ W. and W. N. W. moderate br. fair.
23	—	—	—	—	—	—	—	—	25	47	11	—	—	—	{ W. N. W. varying to the N. E. by N. little wind, cl.
24	—	—	—	—	—	—	—	—	—	—	10	—	—	—	{ N. W. and S. W. little wind, misty.
25	—	—	—	—	—	—	—	—	—	—	10	—	—	—	{ W. S. W. and W. moderate br. fair.
26	—	—	—	—	—	—	—	—	—	—	10	—	—	—	{ E. S. E. and S. E. moderate br. cl. rain.
27	—	—	—	—	—	—	—	—	—	—	11	—	—	—	{ E. and E. S. E. very little wind, rain.
28	—	—	—	—	—	—	—	—	—	—	10	—	—	—	{ N. E. and E. l. br. rain. cl.
29	—	—	—	—	—	—	—	—	—	—	9	28	1	—	Do.
30	—	—	—	—	—	—	—	—	26	43	—	—	—	—	{ W. N. W. l. br.
31	—	—	—	—	—	—	—	—	—	—	—	—	—	—	{ W. N. W. very little wind, fair.
A. 1	58	20	140	0	—	—	—	—	26	50	—	—	—	—	{ W. N. W. l. br. fair.
2	58	19	139	54	—	—	—	—	26	45	—	—	—	—	{ N. W. and S. S. W. very little wind, fair.
3	57	59	139	52	—	—	—	—	26	48	—	—	—	—	{ W. very little wind, misty.
4	57	45	139	9	—	—	—	—	—	—	—	—	—	—	{ E. varying to the S. S. W. by S. very little wind.
5	57	17	138	26	—	—	—	—	26	34	—	—	—	—	{ E. very little wind, foggy.
6	57	20	138	20	138	40	—	—	25	0	—	—	—	—	{ W. N. W. very little wind, fair.
7	56	30	137	5	137	29	—	—	25	7	—	—	—	—	{ N. W. Do.
8	55	42	136	27	136	48	—	—	—	—	—	—	—	—	{ W. fair, l. br.
9	54	47	135	49	136	9	—	—	—	—	—	—	—	—	{ W. fr. br. misty.
10	54	21	135	8	135	43	—	—	—	—	—	—	—	—	{ W. S. W. fr. br. foggy.
11	54	10	135	23	135	49	—	—	—	—	—	—	—	—	{ N. N. W. l. br. foggy.
12	54	2	136	14	—	—	—	—	—	—	—	—	—	—	{ Do.
13	53	59	136	6	—	—	—	—	—	—	—	—	—	—	{ S. very little wind, do.
14	53	49	135	41	136	19	—	—	—	—	—	—	—	—	{ S. and E. S. E. very foggy.
15	53	50	135	52	136	8	—	—	—	—	—	—	—	—	{ E. l. br. misty.
16	53	21	136	32	136	54	—	—	—	—	—	—	—	—	{ Do.
17	53	15	136	26	136	41	137	2	23	39	—	—	—	—	{ N. E. very little wind, misty.
18	52	34	134	29	136	46	—	—	23	16	—	—	—	—	{ N. W. l. br. fair.
19	52	7	134	0	134	4	—	—	22	26	—	—	—	—	{ N. W. and S. W. little wind, misty.
20	51	40	133	35	133	41	—	—	21	20	—	—	—	—	{ N. W. and W. l. br. fair.
21	52	2	132	50	133	7	—	—	20	58	—	—	—	—	{ W. and S. S. W. fr. g. fair.
22	52	15	131	56	—	—	—	—	—	—	—	—	—	—	{ S. and S. E. fr. g. misty.
23	51	48	132	31	131	53	—	—	19	30	—	—	—	—	{ S. E. heavy g. foggy.
24	51	2	132	5	131	40	—	—	21	20	—	—	—	—	{ W. N. W. l. br. foggy.
25	49	56	131	9	130	25	—	—	19	47	—	—	—	—	{ W. N. W. l. br. fair.
26	49	22	130	49	129	58	—	—	19	47	—	—	—	—	{ E. S. E. very little wind, foggy.

Aug. Sept. 1786.	Lat. North.		Long. computed West.		Long. W. by the Time Piece, No. 18.		Long. W. by the Dif. of the M. from the Sun.		Declina- tion of the Needle E.		Ther- momi- ter, ob- served at noon.	Barometer of Nairne observed at 9 in the morn- ing and 3 in the afternoon.		Winds; State of the Sky; Remarks.		
	D.	M.	D.	M.	D.	M.	D.	M.	D.	M.		At 9. P. L.	At 3. P. L.			
A. 27	49	1	131	10	—	—	—	—	20	0	16	28	1	28	1	N varying to the E. S. E. and round every point of the compass in whirl- winds, little wind, ft.
28	48	35	130	8	128	58	—	—	19	12	15	28	3	28	3	W. varying to the N. E. by N. l. br. foggy.
29	48	36	129	23	127	51	—	—	—	—	15	28	2	28	2	N. E. varying to the W. N. W. by N. l. br. cl.
30	48	31	129	21	127	54	—	—	17	28	14	Do.	Do.	Do.	Do.	W. N. W. varying to the S. S. E. by S. l. br. foggy.
31	48	11	129	35	127	58	—	—	17	28	15	28	1	28	1	S. and S. W. a calm, cl. W. S. W. varying to the N. W. partial gusts of wind.
S. 1	46	37	128	23	127	1	127	1	16	55	14	28	2	28	2	W. and W. N. W. l. br. fair.
2	45	55	127	55	126	36	126	59	16	35	14	28	4	28	4	S. W. varying to the S. E. by S. a calm, fair.
3	45	56	127	55	126	38	—	—	16	20	15	Do.	Do.	Do.	Do.	S. S. W. varying to the N. by W. mo- derate br. fair.
4	44	42	128	10	126	58	—	—	16	14	15	Do.	28	3	Do.	N. and N. E. l. br. cl.
5	43	1	128	9	127	2	—	—	15	26	14	28	3	Do.	Do.	N. and N. N. W. moderate br. foggy.
6	41	22	128	7	—	—	—	—	—	—	14	Do.	Do.	Do.	Do.	Do
7	40	48	128	22	127	23	—	—	15	35	14	Do.	Do.	Do.	Do.	N. N. E. varying to the N. W. by N. l. br. fair.
8	39	51	128	24	127	26	—	—	14	0	14	28	2	28	1	N. and N. N. E. l. br. cl.
9	38	59	127	55	—	—	—	—	—	—	15	28	1	Do.	Do.	N. N. W. and W. little wind, foggy.
10	38	11	124	41	—	—	—	—	—	—	15	Do.	Do.	Do.	Do.	W. and N. W. l. br. foggy.
11	37	1	127	8	126	31	—	—	—	—	15	Do.	Do.	Do.	Do.	N. W. and N. fine br. rather foggy.
12	37	3	125	29	125	2	—	—	—	—	15	Do.	Do.	Do.	Do.	N. N. W. and N. W. l. br. foggy.
13	36	39	124	53	124	7	—	—	11	47	14	Do.	28	0	Do.	N. W. varying to the N. N. E. by N. l. br. misty.
14	36	55	124	46	123	57	124	31	11	39	14	Do.	28	1	Do.	W. and W. S. W. little wind, rather foggy.
15	—	—	—	—	—	—	—	—	—	—	14	Do.	28	0	Do.	W. S. W. and W. l. br. fair.
16	—	—	—	—	—	—	—	—	—	—	14	—	—	—	—	S. varying to the E. S. E. equally w. fair.
17	—	—	—	—	—	—	—	—	—	—	14	—	—	—	—	S. E. varying to the S. W. by S. mode- rate br. fair.
18	—	—	—	—	—	—	—	—	—	—	15	—	—	—	—	S. W. and W. S. W. moderate br. cl. rain.
19	—	—	—	—	—	—	—	—	—	—	15	—	—	—	—	N. N. E. varying to the W. N. W. by N. l. br. fair.
20	—	—	—	—	—	—	—	—	—	—	14	—	—	—	—	

Sept. Oct. 1786.	Lat. North.	Long. computed West.	Long. W. by the Time. Piece, No. 18.	Long. W. by the Dif. of the M. from the Sun.	Declina- tion of the Needle E.	Ther. interi- or, ob- s'd at noon.	Bar. meter of Nairne, observed at 9 in the morn- ing and 3 in the afternoon.	Winds; State of the Sky; Remarks.	
	D. M.	D. M.	D. M.	D. M.	D. M.	D.	At 9. P. L.	At 3. P. L.	
S. 21	—	—	—	—	—	15	—	—	S. W. and S. E. by S. moderate breeze, fair.
22	—	—	—	—	—	15	—	—	N. W. varying to the W. S. W. by W. l. br. fair.
23	—	—	—	—	—	15	—	—	W. S. W. varying to the S. E. by S. little wind, fair.
24	—	—	—	—	11 57	15	—	28 2	W. varying to the E. S. E. by S. little wind, cl.
25	36 46	124 18	124 0	—	—	15	28 2	Do.	S. W. varying to the W. N. W. by W. little wind, misty.
26	36 41	124 52	124 13	—	11 46	16	Do.	Do.	S. S. W. varying to the W. N. W. little wind, cl.
27	35 46	125 42	125 12	—	—	16	28 3	28 3	W. N. W. and N. N. W. do.
28	34 14	127 7	126 43	—	—	16	Do.	Do.	N. W. and W. N. W. moderate br. misty.
29	32 46	128 33	128 37	128 49	11 43	17	28 4	Do.	N. N. W. and N. l. br. foggy.
30	31 2	130 39	130 15	—	—	16	Do.	Do.	N. and N. N. E. mo- derate br. rather cl.
O. 1	29 31	132 37	—	—	—	16	28 3	Do.	N. and N. N. W. l. br. misty.
2	28 43	134 7	133 28	134 26	—	16	Do.	Do.	N. and N. E. little wind, misty.
3	28 12	135 33	134 33	—	9 42	17	Do.	Do.	N. N. E. l. br. cl.
4	27 56	136 6	135 20	—	9 33	18	Do.	Do.	N. E. varying to the W. by N. little wind, misty.
5	27 32	136 53	136 11	—	9 0	18	28	Do.	W. S. W. varying to the N. N. E. by N. l. br. cl.
6	27 36	137 58	137 34	—	8 43	18	Do.	28 4	N. and E. N. E. lit- tle wind, fair.
7	27 57	138 58	138 25	—	—	18	Do.	Do.	E. N. E. and E. little wind, cl.
8	28 6	140 18	139 38	—	—	18	28 5	Do.	E. and E. S. E. l. br. cl.
9	28 7	141 38	141 2	—	8 46	19	28 4	Do.	E. and E. N. E. lit- tle wind, cl.
10	28 3	143 20	142 45	—	8 47	19	Do.	Do.	E. moderate br. fair.
11	27 59	145 2	144 19	—	—	19	28 5	Do.	E. varying to the S. W. by S. little wind, fair.
12	27 59	145 41	145 0	145 35	8 50	20	28 4	Do.	W. N. W. varying to the S. E. by N. a calm.
13	27 54	146 6	145 27	—	8 45	20	28 5	Do.	S. E. and E. S. E. l. br.
14	27 49	147 16	146 38	147 11	8 55	20	28 4	28 3	Do. cl.
15	27 58	148 52	148 2	148 36	9 1	20	28 3	Do.	S. E. and E. S. E. l. br. cl.
16	28 3	149 23	148 36	—	9 32	21	28 4	Do.	S. E. varying to the S. S. W. by S. a calm, misty. I. N. 50°.
17	27 53	149 28	148 35	—	9 15	22	Do.	28 4	W. S. W. varying to the N. E. by N. a calm.

Oct. Nov. 1786.	Latitude North.		Long. computed West.		Long. W. by the Time Piece, No. 18.		Long. W. by the Lif. o. the M. from the Sun.		Declina- tion of the Needle East.		Ther- meter, or, ob- s'd at noon.	Barometer of Nairne, observed at 9 in the morn- ing and 3 in the afternoon.		Winds; State of the sky; Remarks.		
	D.	M.	D.	M.	D.	M.	D.	M.	D.	M.		At 9. P. L.	At 3. P. L.			
O. 18	27	48	149	37	148	39	—	—	9	31	22	28	5	28	3	{ N. W. varying to the S. E. by W. little wind, cl.
19	28	5	150	9	149	1	—	—	—	—	21	28	3	28	2	{ S. E. varying to the S. W. by S. l. br. cl. I. N. 48°.
20	27	42	150	49	—	—	—	—	—	—	20	28	2	Do.		{ S. W. varying to the N. E. by N. little wind, ft.
21	27	47	151	18	149	55	—	—	9	38	20	Do.	28	1		{ E. S. E. varying to the W. S. W. by S. little wind, rain.
22	28	9	152	21	150	26	—	—	—	—	22	Do.	28	2		{ S. W. and S. S. W. little wind, rain.
23	28	5	152	34	150	56	—	—	—	—	21	28	3	28	3	{ W. varying to the N. E.
24	27	25	154	27	152	47	—	—	9	53	20	Do.	28	2		{ N. E. varying to the W. N. W. by N. l. br. cl. rain.
25	27	32	154	47	153	32	—	—	10	12	20	Do.	Do.			{ N. and N. N. E. very little wind, fair. I. N. 47°.
26	27	27	155	38	154	22	155	15	10	40	20	Do.	28	3		{ N. N. W. and N. l. br. fair.
27	27	3	156	33	155	22	—	—	—	—	21	28	2	28	2	{ N. E. and S. S. E. by E. moderate br. rain.
28	26	59	158	36	157	8	—	—	10	30	23	Do.	28	1		{ E. S. E. and S. S. E. fr. g. cl. partial gusts of wind.
29	27	13	159	10	157	43	—	—	10	51	22	28	1	28	2	{ S. S. E. varying to the S. S. W. by S. little wind, ft.
30	26	27	159	8	157	28	158	44	11	4	21	28	2	Do.		{ S. S. W. and W. S. W. l. br. fair.
31	26	31	159	21	158	1	—	—	—	—	22	28	3	Do.		{ W. varying to the E. S. E. by N. little wind, fair. I. N. 44°.
N. 1	25	45	160	42	159	28	—	—	10	31	22	Do.	Do.			{ E. and E. S. E. fr. g. cl.
2	24	44	162	38	161	29	—	—	—	—	23	Do.	Do.			{ E. S. E. and E. N. E. moderate br. fair.
3	24	2	164	30	—	—	—	—	—	—	23	28	2	Do.		{ Do. cl.
4	23	35	166	0	165	7	—	—	—	—	23	Do.	Do.			{ E. and E. S. E. gusts of wind, rain.
5	23	33	166	39	165	58	—	—	—	—	22	28	3	Do.		{ E. and E. N. E. l. br. overcast, rain.
6	23	43	167	53	167	13	—	—	10	29	22	28	2	Do.		{ Do. fine br. cl.
7	23	39	168	28	168	16	—	—	—	—	22	Do.	28	1		{ E. and E. S. E. l. br. fair.
8	22	51	169	45	169	33	—	—	—	—	21	28	1	Do.		{ E. varying to the N. N. W. by N. gusts of wind, rain.
9	21	37	172	3	172	5	—	—	—	—	20	Do.	Do.			{ N. N. E. and N. N. W. fr. g. do.
10	21	15	174	12	174	11	—	—	—	—	20	28	2	Do.		{ Do. moderate br. cl.
11	21	10	175	24	175	32	176	19	12	0	20	28	2	Do.		{ N. N. W. varying to the W. little wind, mifty.
12	21	18	176	3	176	5	176	48	11	20	21	28	1	27	11	{ W. N. W. varying to the S. S. W. by W. little wind, cl.

Nov. Dec. 1786.	Latitude North.		Long. computed West.		Long. W. by the Time- Piece, No. 18.		Long. W. by the Dif. of the M. from the Sun.		Declina- tion of the Needle E.		Ther- interi- or ob- s'd. at noon.		Bar. meter of Nairne observed at 9 in the morn- ing and 3 in the afternoon.		Winds; State of the Sky; Remarks.		
	D.	M.	D.	M.	D.	M.	D.	M.	D.	M.	D.		At 9. P. L.	At 3. P. L.			
N 13	21	13	176	40	176	35	—	12	30	22	28	0	28	0	{	S. S. W. varying to the W. N. W. by W. l. br. rain.	
14	20	54	177	1	176	55	178	36	12	30	21	28	1	28	1	{	W. and N. W. very little wind, cl.
15	20	36	177	28	177	20	—	12	12	22	28	2	Do.			{	W. and W. N. W. do. fair.
16	20	17	179	37	179	15	—	12	8	21	28	3	28	2		{	N. W. varying to the N. E. by N. mode- rate br. fair.
			East.		East.		East.										
17	20	8	178	28	179	2	—	12	0	21	Do.		Do.			{	N. and N. N. W. mo- derate br. cl.
18	19	57	177	30	178	24	—	11	59	21	28	2	Do.			{	Do. fair.
19	19	32	176	42	178	0	—	12	6	23	Do.		28	1		{	W. N. W. and N. N. W. l. br. rain.
20	19	38	175	40	176	49	—	12	20	23	Do.		Do.			{	N. W. varying to the N. E. by N. little wind, cl.
21	20	3	174	49	176	0	—	11	39	23	Do.		Do.			{	N. E. varying to the E. S. E. by S. l. br. fair.
22	20	11	174	5	175	7	—	—	—	23	Do.		Do.			{	S. E. varying to the W. N. W. gusts of wind, rain.
23	19	30	173	6	174	6	—	12	44	22	Do.		28	2		{	N. W. and W. N. W. l. br. fair.
24	19	46	172	26	173	27	—	12	8	23	Do.		28	1		{	N. W. varying to the S. E. by S. l. br. fair.
25	20	42	171	38	172	39	—	—	—	24	28	1	28	0		{	S. S. E. and W. by S. moderate br. cl. rain.
26	20	33	170	36	171	35	169	57	12	24	23	28	2	28	2	{	W. S. W. varying to the N. N. E. by N. l. br. fair.
27	20	44	169	6	170	8	168	31	11	40	22	28	3	28	3	{	N. and N. E. l. br. cl.
28	20	20	167	32	168	17	168	17	11	18	22	Do.		Do.		{	E. N. E. and N. E. fine br. cl. rain.
29	20	39	166	0	166	33	—	11	29	21	Do.		28	2		{	E. and E. N. E. l. br. fair.
30	20	30	164	31	165	0	—	11	20	22	Do.		Do.			{	Do.
D. 1	20	53	163	52	164	28	—	10	34	23	28	2	28	1		{	E. varying to the W. S. W. by S. very lit- tle wind, fair.
2	21	39	163	17	164	12	—	9	38	24	Do.		Do.			{	S. S. W. and S. W. fine br. gusts of wind.
3	20	48	162	49	163	49	—	—	—	23	Do.		Do.			{	S. W. and W. N. W. partial gusts of wind, rain.
4	20	47	161	3	161	58	—	10	16	21	28	4	28	3		{	N. W. varying to the N. E. by N. gusts of w. moderate br. cl.
5	21	3	158	57	159	57	—	10	3	21	Do.		28	2		{	N. E. and E. N. E. fine br. cl.
6	21	3	157	4	158	9	—	8	40	22	28	2	28	1		{	E. N. E. varying to the S. moderate br. cl.
7	21	27	156	33	157	38	—	8	30	23	Do.		28	2		{	S. varying to the N. W. by W. l. br. cl.
8	21	21	155	19	156	19	—	—	—	22	28	3	Do.			{	W. N. W. varying to the N. E. l. br. fair.
9	20	52	153	0	154	6	—	7	10	21	Do.		28	3		{	N. E. and E. N. E. fr. g. cl.

Dec. 1786, and Jan. 1787.	Latitude North.		Long. computed East.		Long. E. by the Time Piece, No. 18.		Long. E. by the Dif. of the M. from the Sun.		Declina- tion of the Needle East.		Ther- mometer interi- or, ob- s'd at Noon.	Barometer or Nairne observed at 9 in the morn- ing and 3 in the afternoon.		Winds; State of the Sky; Remarks.			
	D.	M.	D.	M.	D.	M.	D.	M.	D.	M.	D.	At 9. P. L.	At 3. P. L.				
D. 10	21	0	151	3	151	55	—	7	30	21	28	3	28	2	{ E. and E. N. E. fine br. fair.		
11	20	53	149	14	150	13	148	47	7	20	22	Do.	Do.	Do.	{ E. and E. S. E. fr. g. fair.		
12	20	3	147	18	148	14	146	39	7	21	23	Do.	Do.	Do.	{ S. S. E. varying to the S. S. W. l. br. cl. rain.		
13	20	26	146	5	147	23	—	6	17	24	Do.	Do.	Do.	Do.	{ W. S. W. varying to the N. E. moderate br. gusts of wind, cl. N. E. moderate br. misty.		
14	20	17	144	38	145	49	—	—	—	23	Do.	Do.	Do.	Do.	{ Do. cl. rain.		
15	19	44	144	21	145	14	—	—	—	23	Do.	Do.	Do.	Do.	{ E. N. E. and N. E. l. br. cl.		
16	20	4	142	59	143	30	—	—	—	23	28	2	28	1	{ E. N. E. varying to the W. S. W. by S. moderate br. misty.		
17	19	57	141	49	142	24	—	3	53	23	Do.	Do.	Do.	Do.	{ W. S. W. varying to the N. N. W. by W. l. br. fair.		
18	20	9	140	39	141	16	—	3	30	24	Do.	28	2	2	{ N. W. and N. l. br. fair. N. N. W. varying to the N. E. by N. l. br. fair.		
19	19	53	140	6	140	45	—	3	24	23	Do.	28	1	1	{ N. E. and E. N. E. fine br. cl.		
20	19	45	138	53	139	24	—	3	4	21	28	3	28	2	{ E. N. E. and N. E. l. br. cl.		
21	19	38	137	25	137	55	—	1	38	21	Do.	Do.	Do.	Do.	{ N. E. and N. N. E. heavy g. cl.		
22	20	2	135	58	136	14	—	1	11	21	Do.	—	—	—	{ N. E. and N. fine br. do.		
23	20	13	134	23	134	31	—	0	45	22	Do.	28	3	3	{ N. N. W. and N N. E. very strong g. misty.		
24	20	44	131	27	132	14	—	0	42	22	Do.	Do.	Do.	Do.	{ N. N. E. and E. do. cl. rain.		
25	20	35	129	23	130	17	127	28	0	16	22	Do.	Do.	Do.	{ N. E. and E. fine br. cl.		
26	20	19	126	30	—	—	—	—	0	25	20	28	5	28	4	{ E. and E. S. E. mo- derate br. cl.	
27	21	11	124	20	125	22	122	58	0	46	19	Do.	Do.	Do.	Do.	{ E. S. E. and N. N. E. by E. fine br. cl.	
28	21	11	122	23	123	7	120	18	0	33	20	28	4	28	3	{ N. E. and E. N. E. fine br. overcast, small rain.	
29	21	15	121	17	122	8	119	34	0	23	21	28	3	28	2	{ N. and N. E. l. br. overcast.	
30	21	16	119	38	120	51	—	—	—	22	Do.	Do.	Do.	Do.	Do.	{ N. E. moderate br. hazy.	
31	22	2	116	56	119	4	—	—	—	20	Do.	28	3	3	3	{ N. E. and E. N. E. fine br. hazy.	
1787																	{ N. E. varying to the N. W. by N. fine br. overcast, small rain.
J. 1	22	19	114	13	116	20	—	—	—	18	28	64	28	4	4	{ N. and N. E. l. br. overcast.	
2	22	9	112	58	114	33	—	—	—	16	28	5	Do.	Do.	Do.	{ N. E. and E. N. E. fine br. hazy.	
3	22	23	112	8	—	—	—	—	—	15	Do.	28	5	5	5	{ N. E. varying to the N. W. by N. fine br. overcast, small rain.	
4	—	—	—	—	—	—	—	—	—	—	28	6	—	—	—	{ N. and N. E. l. br. overcast.	

Jan. Feb. April, and May, 1787.	Latitude North, observed at noon.	Latitude North, computed at noon.	Long. East, computed at noon.	Long. East, by the Dis- tances of the Moon from the Sun, reduced at noon.	Long. E. by the Time. Piece, No. 18. at noon.	Long. by the Time Piece, No. 18, at noon, corrected according to the ob- servations of diff. of the M. from the Sun, being such as is made use of on the Chart.
	D. M.	D. M.	D. M.	D. M.	D. M.	D. M.
Jan.	At Ma- cao.					
F. 5	—	21 54	111 47			
6	—	22 3	112 34			
7	—	21 54	112 36			
8	—	21 19	112 59	—	113 0	
9	20 53	20 55	113 40	—	113 54	
10	19 59	19 55	115 2	—	114 53	
11	18 53	19 0	115 58	—	115 32	
12	18 30	18 30	116 29	—	116 6	
13	18 13	18 20	117 6	—	116 40	
14	18 12	18 9	117 52	—	117 26	
15	18 19	18 19	118 16	—	117 55	
16	17 59	17 48	118 27	—	118 25	
17	18 6	17 44	118 20	—	118 22	
18	18 3	17 45	118 11	—	118 26	
19	17 41	17 25	117 46	—	118 27	
20	15 48	15 44	117 17	—	117 37	
21	14 51	15 1	117 18	—	117 33	
22	14 33	14 31	117 56	—	117 58	
23	14 25	14 27	118 26			
A. 10	At Cavite. Sailed fr. Cavite.	—	—	Long. of the Ob- servatory.	118 35	118 35
11	15 21	—	117 25	—	117 13	117 12
12	15 44	15 48	117 10	—	117 6	117 6
13	16 16	16 10	116 57	—	116 53	116 52
14	16 53	16 46	117 11	—	117 15	117 14
15	17 6	17 7	117 18	—	117 24	117 22
16	17 32	17 33	117 22	—	117 35	117 33
17	18 13	18 4	117 14	—	117 25	117 22
18	19 32	19 21	117 11	—	117 17	117 14
19	21 0	20 53	118 29	—	117 9	117 6
20	21 28	21 19	117 35	—	117 8	117 5
21	—	21 45	117 20	—	116 54	116 51
22	22 1	22 7	117 10	—	116 46	116 42
23	22 10	22 7	117 36	—	117 13	117 9
24	22 26	22 20	117 48	167 30 A mean between 20 obser- vations West.	117 39	117 34
25	22 51	22 45	116 42	—	117 33	117 28
26	22 59	23 3	116 17	—	116 18	116 13
27	22 39	22 42	117 23	—	117 44	117 39
28	22 58	22 53	117 13	—	117 37	117 32
29	23 29	23 19	117 18	—	117 40	117 34
30	22 13	22 17	117 19	—	117 51	117 45
M. 1	—	21 47	117 52	—	118 15	118 8
2	21 37	21 37	119 5	—	119 17	119 9
3	21 47	21 49	119 11	—	119 18	119 9
4	—	22 19	119 41	—	119 52	119 41
5	—	22 53	120 12	—	120 27	120 15
6	24 32	23 32	120 21	—	120 39	120 25
7	26 7	25 41	120 38	—	121 19	120 4

All the
following
Longi-
tudes are
founded
on that of
Cavite, to
which
they have
been re-
duced.

May and June, 1787.	Latitude North ob. served at noon.	Latitude North computed at noon.	Longi- tude East computed at noon.	Longi- tude East, by the dif- ferences of the Moon from the Sun.	Longi- tude East by the Time Piece, No. 18, at noon.	Long. by the Time Piece, No. 18, at noon, corrected according to the ob- servations of dist. of the M. from the Sun, being such as is made use of on the Chart.
	D. M.	D. M.	D. M.	D. M.	D. M.	D. M.
M. 8	27 8	27 3	120 20	—	121 26	121 09
9	27 44	27 41	119 56	—	121 7	120 49
10	—	28 31	120 0	—	121 15	120 55
11	—	28 53	120 17	—	121 37	121 16
12	—	23 50	120 22	—	121 45	121 23
13	—	29 37	120 28	—	122 0	121 36
14	29 43	29 57	120 17	At the place of anch.	121 57	121 32
15	—	30 0	120 6	—	121 50	121 23
16	—	30 41	120 4	—	121 52	121 23
17	—	31 14	120 2	—	121 53	121 23
18	31 21	31 38	120 24	—	121 42	121 10
19	31 53	32 1	120 51	—	122 5	121 33
20	32 5	32 12	121 2	Do.	122 24	121 50
21	32 38	32 53	122 48	—	124 4	123 28
22	33 0	33 6	123 25	123 46 A mean between 266 ob- servations West.	124 36	123 59
23	33 41	33 36	124 25	—	125 42	125 3
24	34 24	34 22	125 11	—	126 39	125 59
25	34 31	34 25	125 29	—	127 5	126 23
26	35 27	35 31	126 21	—	128 3	127 27
27	—	36 18	127 9	—	128 52	128 7
28	36 40	36 36	127 21	—	128 47	128 1
29	37 14	37 8	127 56	—	129 21	128 33
30	38 14	38 9	128 43	—	130 8	129 20
31	38 24	38 26	129 37	—	131 7	130 17
J. 1	38 12	38 13	130 37	—	132 8	131 16
2	37 39	37 43	131 16	—	132 48	131 54
3	37 18	37 26	131 50	—	133 5	132 10
4	—	37 12	132 36	—	133 56	132 58
5	38 7	37 54	133 0	—	134 26	133 27
6	37 44	37 46	133 58	—	135 32	134 31
7	38 33	38 23	133 56	—	135 35	134 32
8	39 26	39 15	132 44	133 40	134 2	132 57
9	—	40 15	131 27	—	133 18	132 11
10	40 58	41 0	130 41	131 13	132 10	131 1
11	41 57	42 7	130 49	131 32	132 33	131 22
12	42 33	42 46	131 20	The first of these 3 results, is by a mean between	133 5	131 52
13	42 45	42 44	131 48	48 obser- vations	133 25	132 10
14	43 30	43 31	132 59	East, the second by	134 41	133 24
15	43 50	43 50	133 32	380 obser- vations	135 6	133 47
16	44 3	43 56	133 53	East, and the third by 396 obser- vations	135 20	134 0
17	—	44 5	134 6	East, and the third by 396 obser- vations	135 33	134 11
18	44 11	44 9	134 28	East, and the third by 396 obser- vations	135 58	134 34
19	44 30	44 28	134 35	East, and the third by 396 obser- vations	136 6	134 40
20	44 44	44 39	134 33	135 42	136 17	134 50
21	—	44 50	134 57	By a mean between 20 obser- vations	136 31	135 2
22	44 54	45 4	135 10	West.	136 29	134 58
23	45 8	45 8	135 2	—	136 28	134 56
24	—	45 12	134 52	At the place of anch.	136 20	134 46

June, July, and Aug. 1787.	Latitude North, observed at noon.	Latitude North, computed at noon.	Long East, computed at noon.	Long. East by the Dis- tance of the Moon from the Sun, reduced at noon.	Longi- tude W. by the Time Piece, No. 18. at noon	Long. by the Time Piece, No. 18, at noon, corrected according to the ob- servations of alt. of the M. from the Sun, being such as is made use of on the Chart.	
	D. M.	D. M.	D. M.	D. M.	D. M.	D. M.	
J. 25	—	—	—	—	—	—	
26	—	—	134 52	At the place of anch.	—	—	
27	45 11	45 10	135 29	—	136 27	134 47	
28	46 3	46 5	136 46	—	137 40	135 58	
29	—	46 50	138 4	—	138 52	137 9	
30	47 18	47 24	138 17	—	138 58	137 14	
Jl. 1	—	47 42	138 21	—	139 3	137 16	
2	—	47 45	138 24	—	139 11	137 22	
3	—	—	—	—	—	—	
4	—	47 43	138 26	—	139 13	137 21	
5	47 45	47 40	138 33	Do.	139 19	137 25	
6	47 57	47 54	139 27	—	139 40	137 44	
7	48 29	48 33	140 38	139 35 Mean of 96 obser- vations E.	140 55	138 57	
8	48 22	48 18	140 49	139 23 Mean of 56 obser- vations E.	141 15	139 15	
9	—	48 11	140 49	—	141 20	139 18	
10	48 25	48 9	140 57	139 41	141 34	139 30	
11	48 10	48 6	141 22	139 45 The first by 72 ob- servations East: the second by 238 do.	141 56	139 51	
12	47 49	47 48	141 21	At the place of anch.	152 5	139 49 131 58	At the place of anch.
13	—	—	141 25	—	—	—	
14	48 13	48 10	140 58	—	141 42	139 31	
15	48 26	48 26	140 32	—	141 20	139 7	
16	48 17	48 17	140 20	—	141 15	139 0	
17	48 18	48 18	140 5	—	141 3	138 46	
18	48 12	48 12	140 5	—	141 7	138 8	
19	—	48 43	141 8	—	142 13	139 2	
20	49 28	—	141 15	139 49	142 23	140 1	
21	49 53	49 59	141 10	—	142 25	140 1	
22	50 32	50 34	141 1	At the place of anch.	142 23	139 56	Do.
23	50 55	50 54	141 2	138 45	142 27	139 59	
24	51 26	51 23	140 49	—	142 7	139 37	
25	—	51 29	139 57	—	141 37	139 5	
26	—	51 40	—	—	141 44	139 11	
27	51 32	—	—	—	141 58	139 22	At 3 P. M. an- chored in Baie de Cañries.
28	51 26 At the observa- tory.	—	—	At anchor in Baie de Cañries.	141 30	—	
29							
30							
31							
A. 1							
2							

August and September, 1787.	Latitude North observed at noon.			Latitude North, computed at noon.			Longitude East, computed at noon.			Longitude East, by the Distances of the Moon from the Sun, reduced at noon.			Longitude East, by the Time Piece No. 18, supposing the Longitude of the Bay of Calcutta to be 138 d. 45 m. 11 s. and the time lost every day by the time-piece to be equal to 40 m. 46 s.			
	D.	M.	S.	D.	M.	S.	D.	M.	S.	D.	M.	S.	D.	M.	S.	
August	3	51	21	15	51	25	24	139	35	50	—	—	139	32	54	
	4	50	50	20	50	51	57	139	0	15	—	—	138	46	24	
	5	50	38	8	50	35	8	139	30	16	—	—	139	39	3	
	6	50	23	6	50	22	23	139	11	20	—	—	139	11	44	
	7	—	—	—	50	8	21	139	40	59	—	—	139	37	—	
	8	49	12	48	49	14	45	139	9	48	—	—	139	0	49	
	9	48	26	21	48	23	54	139	40	24	—	—	139	25	33	
	10	46	56	57	46	50	0	139	59	52	By a mean between 308 distances of the Moon from the Sun East.			139	31	53
	11	45	56	7	46	6	34	140	15	41	139	38	46	139	53	9
	12	—	—	—	45	41	32	140	30	53	—	—	—	140	9	0
	13	45	20	31	45	28	8	140	48	45	—	—	—	140	27	54
	14	45	29	14	45	30	34	141	13	29	—	—	—	141	8	19
	15	46	9	38	46	10	27	142	30	19	—	—	—	142	20	36
	16	—	—	—	46	21	8	143	27	4	—	—	—	143	24	24
	17	46	9	31	46	9	8	143	43	19	—	—	—	143	54	57
	18	45	58	47	46	6	52	144	35	12	—	—	—	144	27	1
	19	46	19	51	46	8	53	145	51	18	—	—	—	145	49	41
	20	—	—	—	46	35	18	147	32	30	By a mean between 150 distances of the moon from the sun, West.			147	35	14
	21	47	9	2	47	8	54	148	8	12	145	22	25	148	72	0
22	47	14	58	47	13	59	147	55	41	—	—	—	147	21	0	
23	47	11	38	47	10	4	148	9	31	—	—	—	147	34	28	
24	47	23	5	47	23	11	149	11	28	—	—	—	148	48	50	
25	—	—	—	47	31	32	149	39	7	—	—	—	149	16	0	
26	—	—	—	47	22	38	149	32	5	—	—	—	149	47	0	
27	47	10	44	47	21	50	149	35	34	—	—	—	149	50	9	
28	—	—	—	47	4	44	149	5	53	—	—	—	149	21	15	
29	—	—	—	46	22	59	149	23	50	—	—	—	149	43	0	
30	45	50	0	46	18	41	150	4	41	—	—	—	150	27	16	
31	—	—	—	46	7	57	151	5	26	—	—	—	151	28	0	
September	1	—	—	46	56	21	152	44	40	—	—	—	153	11	0	
	2	48	29	5	48	29	42	154	39	51	—	—	—	155	21	22
	3	49	19	31	49	26	8	155	52	7	Mean between 224 distances of the M. from the Sun, East.			156	36	20
	4	—	—	—	50	27	16	155	42	58	157	6	44	156	32	58
	5	50	58	49	51	11	13	156	4	1	Mean between 32 distances of the M. from the Sun, East.			157	20	6
	6	52	29	9	52	30	49	156	8	23	—	—	—	—	—	—
	7	52	46	21	52	44	39	155	26	18	—	—	—	—	—	—
	8	—	—	—	At anchor.			At anchor.			—	—	—	—	—	—
				53	0	39	155	14	27	—	—	—	—	—	—	

The following Table was presented, independently of the Journal of the Voyage, by Dagelet to Fleurieu, the Ex-minister of Marine, from whom I received it. Although the Explanation of this Table, and particularly that of the Column of Corrections, does not throw all the Light on the Subject which might be desired, it appears to me that the Publication of these Pieces, such as they are, may be of some Advantage to Navigators and Astronomers. (Fr. Ed.)

EXPLANATION

OF THE ANNEXED TABLE OF LONGITUDES, FROM
APRIL 11, TO SEPTEMBER 7, 1787.

THE observations of the distances of the moon from the sun, both in the east and west, were very numerous during our navigation in the seas of East Tartary, till our arrival in the bay of Avatscha : by them we were enabled frequently to verify the going of the time-piece, No. 19, by comparing the longitudes obtained by the distances, with those which the time-piece would have given. on the supposition, that, during this whole navigation, it had preserved the daily motion attributed to it from the observations made at Cavite.

The first column of longitude presents, each day, the longitude of the ship, reduced to the time of noon, such as the time-piece No. 19 gave it, according to its daily movement ascertained at Cavite, and by supposing the situation of that port to be 117 deg. 3 min. east of Paris, as we deduced it from the difference of meridian given by the time-piece between Macao and Cavite, regard being paid to all corrections. A mean between the results of some observations of distances west, gave the longitude of Cavite at 117 deg. 50 min. ; but on reducing the observations made at Macao to this port, Dagelet concluded this result to be too much by from 13 min. to 15 min. 2 sec. He had observed many occultations of small stars by the moon, according to which he proposed to remove any doubts which might remain as to the longitude of Cavite, being certain that he had ascertained the position of those stars in the journals of his observatory at the *école militaire*.

The column of corrections furnishes the additions which it is necessary to make each day to the longitude of the time-piece No. 19, in order to obtain the true longitude expressed in the last column.

Dagelet does not explain the method which he made use of in drawing up the column of corrections ; we only know, that, after having computed the quicker or slower going of the time-piece in the interval of two series of observations east and west, by comparing his results with the mean result of each series, he deduced the error of the time-piece at the different periods of the observations of distances ; and thence deduced, by way of interpolation, the corrections for the intermediate days.

April, May, and June, 1787.			Latitude.			Longitude by the Time Piece, No. 19. Cavite being 117d. 30m. East of Paris.			Corrections.			True Longitude.		
			D.	M.	S.	D.	M.	S.	M.	S.	D.	M.	S.	
April.	11	15	18	8	117	37	36	+	26	31	118	4	7	
	12	15	45	0	116	59	30	+	29	16	117	28	46	
	13	16	11	53	117	23	15	+	31	44	117	54	59	
	14	16	46	33	117	21	30	+	33	55	117	55	25	
	15	17	3	4	117	39	45	+	35	48	118	15	33	
	16	17	30	49	—	—	—	+	37	15	—	—	—	
	17	18	9	52	117	24	7	+	38	35	118	2	42	
	18	19	30	54	117	18	15	+	39	38	117	57	53	
	19	20	57	49	117	39	30	+	40	24	118	19	54	
	20	21	25	13	117	0	0	+	40	55	117	40	55	
	21	21	39	Comp.	—	—	—	+	41	10	—	—	—	
	22	22	3	31	116	55	45	+	41	9	117	36	54	
	23	22	1	36	117	41	30	+	40	51	118	22	21	
	24	22	23	45	117	41	30	+	40	13	118	21	43	
	25	22	49	38	116	41	15	+	39	49	117	21	4	
	26	22	55	28	116	17	30	+	38	55	116	56	25	
	27	22	35	1	117	34	15	+	38	0	118	12	15	
	28	22	53	27	117	23	30	+	37	4	118	0	34	
	29	23	24	46	117	17	45	+	36	7	117	53	52	
	30	22	10	18	117	39	15	+	35	9	118	14	24	
	May.	1	21	45	Comp.	—	—	—	+	34	10	—	—	—
		2	21	38	5	119	8	50	+	33	10	119	42	0
3		21	44	51	119	10	7	+	32	9	119	42	16	
4		22	14	Comp.	—	—	—	+	31	6	—	—	—	
5		23	4	0	120	6	45	+	30	1	120	36	46	
6		24	28	50	120	29	15	+	28	55	120	58	10	
7		26	4	55	121	5	40	+	27	47	121	33	27	
8		27	10	5	120	56	0	+	26	38	121	22	38	
9		27	42	28	120	54	45	+	25	28	121	20	13	
10		28	21	Comp.	—	—	—	+	24	17	—	—	—	
11		—	—	—	—	—	—	+	23	5	—	—	—	
	12	—	—	—	—	—	—	+	21	46	—	—	—	
	13	29	25	Comp.	121	34	30	+	20	16	121	54	46	
	14	29	46	23	121	34	30	+	18	38	121	53	8	
	15	30	—	—	—	—	—	+	16	53	—	—	—	
	16	—	—	—	—	—	—	+	15	4	—	—	—	
	17	31	0	Doubt.	—	—	—	+	13	4	—	—	—	
	18	31	14	35	121	22	50	+	10	53	121	33	8	
	19	31	45	15	—	—	—	+	8	30	—	—	—	
	20	32	0	17	121	57	15	+	5	53	122	3	8	
	21	32	33	50	123	30	15	+	3	3	123	33	18	
	22	32	56	42	124	3	25	+	0	4	124	3	19	
	23	33	41	12	125	6	30	—	2	45	125	3	45	
	24	34	22	26	126	11	50	—	5	19	126	6	31	
	25	34	28	36	126	28	50	—	7	36	126	21	14	
	26	35	28	41	127	14	26	—	9	34	127	4	52	
	27	36	33	46	127	54	14	—	11	18	127	42	56	
	28	36	39	51	127	50	25	—	12	24	127	38	1	
	29	37	9	5	128	39	41	—	13	55	128	25	49	
	30	38	9	25	129	24	15	—	14	45	129	9	30	
	31	38	22	14	130	23	15	—	15	20	130	7	55	
	June.	1	38	9	27	131	15	15	—	15	35	130	59	40
		2	37	37	21	131	52	42	—	15	39	131	37	3
3		37	19	3	132	11	30	—	15	37	131	55	53	
4		—	—	—	—	—	—	—	15	34	—	—	—	
5		38	6	21	133	18	14	—	15	30	133	2	44	
6		37	39	12	134	30	10	—	15	26	133	14	45	
7		38	28	24	134	35	30	—	15	19	134	20	11	
8		39	16	58	133	11	45	—	15	12	132	56	33	
9		—	—	—	—	—	—	—	15	4	—	—	—	
10		40	48	35	131	19	56	—	14	55	131	5	1	
11		41	54	46	131	35	30	—	15	44	131	20	46	

June, July, and Aug. 1787.			Latitude.			Longitude by the Time Piece, No. 19. Cavite being 117d. 30m. E. of Paris.			Corrections.			True Longitude.									
		D.	M.	S.			D.	M.	S.			M.	S.			D.	M.	S.			
June.	12	42	35	46	132	3	45	—	14	32	131	49	13								
	13	42	47	4	132	20	30	—	14	19	132	6	11								
	14.	43	32	31	133	36	20	—	14	5	133	22	15								
	15	43	53	Comp.	—	—	—	—	13	50	—	—	—								
	16	43	54	20	134	8	15	—	13	34	133	54	41								
	17	44	20	Comp.	—	—	—	—	13	17	—	—	—								
	18	44	7	30	—	—	—	—	12	51	—	—	—								
	19	44	30	0	134	52	30	—	12	13	134	40	17								
	20	44	43	0	135	1	15	—	11	36	134	49	39								
	21	—	—	—	—	—	—	—	—	—	—	—	—								
22	45	1	5	135	22	30	—	10	45	135	11	45									
23	45	9	32	135	5	53	—	10	23	134	55	30									
24	45	10	32	134	51	15	—	10	10	134	41	5									
25	Latitude of anchorage.			Long. of anchorage.																	
26	45	11	16	134	51	15	—	10	1	—	—	—									
27	45	11	43	134	54	45	—	10	3	134	44	42									
28	46	4	4	136	4	19	—	10	9	135	54	10									
29	46	50	18	137	14	23	—	10	19	137	4	4									
30	47	19	16	137	12	5	—	10	33	137	1	32									
July.	1	47	50	5	137	2	30	—	10	53	136	51	37								
	2	47	44	—	137	24	0	—	11	18	137	12	42								
	3	—	—	—	—	—	—	—	11	28	—	—	—								
	4	—	—	—	—	—	—	—	11	48	—	—	—								
	5	47	43	12	137	28	0	—	12	8	137	15	52								
	6	47	57	41	137	59	45	—	12	30	137	45	15								
	7	48	29	15	138	53	46	—	12	53	138	40	53								
	8	48	19	51	139	21	0	—	13	18	139	7	42								
	9	48	16	30	139	34	0	—	13	44	139	20	16								
	10	48	22	34	139	37	15	—	14	11	139	23	4								
	11	48	6	2	139	56	0	—	14	39	139	41	21								
	12	47	53	4	140	0	30	—	15	16	139	45	14								
	13	47	49	10	140	28	42	—	15	58	140	12	44								
	14	48	15	30	—	—	—	—	16	39	—	—	—								
	15	—	—	—	—	—	—	—	17	23	—	—	—								
	16	—	—	—	—	—	—	—	18	10	—	—	—								
	17	—	—	—	—	—	—	—	19	13	—	—	—								
	18	—	—	—	—	—	—	—	20	40	—	—	—								
	19	—	—	—	—	—	—	—	22	20	—	—	—								
	20	49	27	40	140	11	48	—	24	14	139	47	34								
	21	49	50	35	—	—	—	—	26	15	—	—	—								
	22	50	31	15	140	9	52	—	28	36	139	41	16								
	23	50	53	26	140	18	—	—	30	56	139	47	4								
	24	51	26	27	140	10	30	—	33	21	139	37	9								
	25	51	28	0	139	26	15	—	35	42	138	50	32								
	26	—	—	—	—	—	—	—	37	43	—	—	—								
	27	51	29	43	139	43	15	—	39	38	139	5	0								
	28	—	—	—	—	—	—	—	41	26	—	—	—								
	29	51	28	30	139	19	17	—	43	13	138	36	4								
	30	—	—	—	—	—	—	—	—	—	—	—	—								
	31	—	—	—	—	—	—	—	—	—	—	—	—								
August.	1	—	—	—	139	20	47	—	48	0	138	32	47								
	2	—	—	—	—	—	—	—	49	31	—	—	—								
	3	51	20	0	140	18	18	—	51	0	139	27	18								
	4	50	40	31	139	28	30	—	52	26	138	36	4								
	5	50	38	25	140	22	22	—	53	58	139	28	24								
	6	50	20	45	139	58	15	—	55	40	139	2	35								
	7	49	—	—	—	—	—	—	57	32	—	—	—								
	8	48	14	7	139	49	55	—	59	34	138	50	21								
	9	48	25	40	140	13	30	—	61	22	139	12	8								
	10	46	46	45	140	27	0	—	63	9	139	23	51								
	11	45	57	33	140	42	15	—	63	36	139	38	39								
	12	45	56	30	140	42	15	—	64	47	139	37	28								

August and September, 1787.		Latitude.			Longitude by the Time Piece, No. 19. Cavite being 117d. 30m. E. of Paris.			Corrections.		True Longitude.			
		D.	M.	S.	D.	M.	S.	M.	S.	D.	M.	S.	
August.	13	45	20	12	141	27	37	—	65	38	140	21	59
	14	45	29	4	142	7	20	—	66	25	141	0	55
	15	46	9	55	143	24	7	—	66	59	142	17	8
	16	—	—	—	—	—	—	—	67	20	—	—	—
	17	46	9	0	145	1	15	—	67	33	143	53	42
	18	45	55	47	145	22	47	—	67	34	144	15	13
	19	46	20	27	146	54	45	—	67	23	145	47	22
	20	46	29	30	148	48	57	—	66	59	147	41	58
	21	47	8	20	149	33	37	—	66	37	148	27	0
	22	47	16	22	—	—	—	—	66	26	—	—	—
23	47	11	39	148	50	22	—	66	26	147	43	56	
24	47	22	9	149	53	30	—	66	40	148	46	50	
25	—	—	—	—	—	—	—	67	13	—	—	—	
26	—	—	—	—	—	—	—	68	11	—	—	—	
27	47	12	32	150	53	25	—	68	56	149	44	29	
28	47	7	0	150	36	—	—	69	42	149	26	18	
29	—	—	—	—	—	—	—	70	38	—	—	—	
30	45	55	13	152	6	10	—	71	28	150	54	42	
31	—	—	—	—	—	—	—	72	20	—	—	—	
September	1	—	—	—	—	—	—	—	73	14	—	—	—
	2	48	25	0	156	33	30	—	74	11	155	19	19
	3	49	19	30	157	56	0	—	76	10	156	40	50
	4	—	—	—	—	—	—	—	76	13	—	—	—
	5	50	57	30	158	48	7	—	77	12	157	30	55
	6	52	28	59	158	46	15	—	78	12	157	28	3
	7	52	48	20	158	9	10	—	79	11	156	49	59

END OF THE THIRD VOLUME.

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